Are trends in Human Food reflected in Pet Food Purchase?

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This master thesis is the result of my graduate research within the Master Degree Program Management Science at Open University Netherlands.

This thesis is made from the long-cherished desire to write a master's thesis. It eventually succeeded and I hope you enjoy reading this and find it interesting.
Ma, thank you for being there when I got home from school, long ago, your cup of tea, you listening to my dreams. It took me some extra time, but this dream has now come true. Thanks to my wife and children for the patience they have had with me, I had to study, instead of spending time with them. Hope you all have not missed too much.
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Let the poem inspire others as it did to me to make their dream come through.

The road to the top.

Forgo.

On my russet legs
is the salt of my head
six kilometers
six to the top

Dead fingers tingle
the stomach is vomiting
five kilometers
five to the top

You should have trained more
Wheezing aloud
another four kilometers
four to the top

Sour thighs, calves, shins
Moan-sear: stop, stop
another three kilometers
Three to the top

All power is now gone
All water on
another two kilometers
Two more to the top

Stop sing the sirens
No, never, hell no
another kilometers
One to the top

Thousand meters, I think scared
One thousand meters, which is long
I'm dying

How did it go? One asks at the top
Ah, you will not believe it:
I enjoyed.

Free translation from Eveline Rombouts 1999

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Abstract

Changes are seen in our eating habits. We eat differently than we did in the past. Functional food and organic food are here to stay. The desire for health and well-being is a strong driver in food marketing (Goetzke and Spiller, 2014[a]). Next to these changes, humanization—or anthropomorphism—of pets by their owners is seen in consumer behavior. These changes have effect on pet related sales and marketing (Boya et al., 2012). Research of the combination of these two effects is the aim of this study and ads to literature a next layer on the dog-human relationship related consumer behavior and provides marketers with a more detailed perspective on targeting the dog owners.

In recent years research has been done on the usage of functional and organic food products. Consumers are becoming more demanding about the products they consume. Health and well-being are receiving more interest from consumers. This is reflected in the way they are looking at functional foods and organic foods (Goetzke and Spiller, 2014[a]).

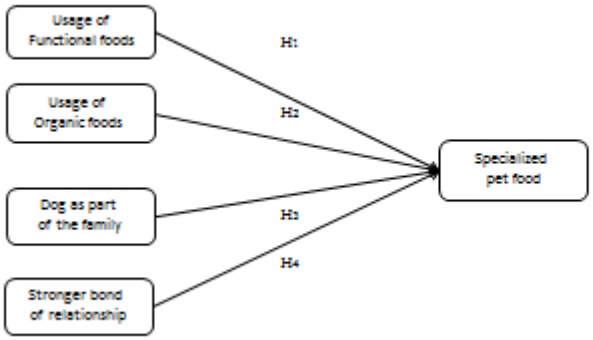
Other research was done on the dog-human relationship including the bond the dog owner has with its dog. Relationships going from companionship to friendship (Holbrook, 2001; Holbrook, 2007; Cavanaugh, 2008) to unconditional love and affection are even resulting in anthropomorphism (Boya et al. 2012). Anthropomorphism or personification is the attribution of human characteristics to pets. Boya et al. (2012) describes three clusters of ownership; "dog-people", dog owners who see their dog as a child; it sleeps on their beds, these owners celebrate the dogs' birthday, etcetera. There is a strong bond and a strong dog-human relationship. Another cluster is "pet-owner", this dog owner sees the dog as a companion, this companion is still seen as an animal and it is treated well, but is kept as you keep any animal. The intermediate cluster is called; "dog-parent", this dog owner is seeing the dog as a buddy.

Research from Tesfom and Birch (2010) indicated that American pet owners are more concerned about the healthy food for their dogs than for themselves. Goetzke and Spiller (2014[b]) found claims that health is an important motivation for consumers for the consumption of both functional and organic foods and Boya et al. (2014) saw differences in purchasing behavior of dog-related products from the pet owners in connection with the bond, the owner has with its pet. Are pet owners who use functional and/or organic food also worried about the health of their pets and are they for that reason looking for functional and/or organic pet food for their dogs? Is the relationship Boya et al. (2014) found of influence on this decision making process?

This research examines and combines earlier studies on the usage of functional and/or organic products by dog owners and the dog-human relationship these owners have with their dogs. It also studies the position of the dogs in their families and the willingness of these dog owners to purchase functional and/or organic pet food products. Functional and or organic pet food is called specialized pet food.

In this study, specialized pet food is defined as an A premium pet food, which is therefore made of functional and/or organic ingredients.

The conceptual model of this study is presented in the following diagram:



A cross-sectional survey design with a single measurement has been employed to 284 dog owners. The survey was conducted using a self-administered questionnaire on a sample divided over the United States (105), the United Kingdom (104) and the Netherlands (75).

Results show a correlated, significant relation between the usage of organic and functional products by the dog owner and the usage of functional and/or organic food for their pets. Results also show a correlated, significant relation between the three clusters of ownership and the usage of functional and/or organic food for their pets. The three different clusters of dog owners were identified as being the "dog-people", the "dog-parent" and the "pet-owner". Significant correlations were found between clusters of "dog-people" and "dog-parent" and their purchasing of organic and/or functional pet food. No significant relation was found for the cluster of "pet-owner". Demographic characteristics of the dog owner did not lead to correlation with the usage of organic and/or functional pet food. The differences in the cluster distribution among the countries surveyed were remarkable. For the United States and the United Kingdom most dog owners were seen in clusters of "dog-people" and "dog-parent', whereas for the Netherlands, most dog owners were found in the cluster of "pet-owner".

The finding of this study indicates that for successful marketing of specialized pet food the purchasing behavior of consumers of functional and/or organic products and their human-dog relationship is "key" for the marketing of specialized pet food. Differentiating between types of dog owners appears most relevant in the marketing of these specialized pet foods. With this new insight pet food marketers are better able to cater to the needs of different dog owners and their pets, and can support the dog owners in purchasing healthy pet food products for their pets.

Changes in dog-human relationships are apparent. This study identified three dog-human relationship clusters with different willingness to purchase specialized organic and/or functional pet food. Consumers bond with their animal companions in ways that resemble human relationships (Holbrook et al., 2001). By coming to a greater understanding of the different relationships we have with our pets, we come to a greater understanding of ourselves as consumers. Research shows that dog owners vary widely in the nature of their relationships with their dogs, and that there are key components that underlie the human-dog bond and vary among dog owners (Dotson and Hyatt, 2008). A limitation of this survey could be its surveying method. Dog owners were chosen by Survey Monkey based upon their known ownership of dogs. These results cannot be generalized to the overall dog owning public in the United States and the United Kingdom. The same applies to the Netherlands; the used population is made up of colleagues, friends and acquaintances that cannot be generalized to overall dog owning public in the Netherlands. This way of doing a survey makes that the Dutch population is not randomly chosen.

A future study on human-dog relationship could help us further understand the humanization of pets and whether this phenomenon affects consumer behavior towards pets in more detail. We might therefore also better understand the impact of this changing human-dog relationship on society. Other research might be, to investigate what is meant by functional and/or organic pet food, what are the consumer needs and requirements concerning this specialized pet food. This would benefit the industry to produce the products that consumers are looking for and is willing to purchase. Also future research could investigate the differences in the cluster distribution of dog owners from not only the Netherlands, the United States, and the United Kingdom, but other Western-European countries as well. It might determine whether the cluster distribution of "dog-people", "dog-parent" and "pet-owner" in for example Germany and France is comparable to the United States, the United Kingdom, or is this distribution the same as found for the Netherlands. The information on the distribution of clusters -the number of "dog-people" and "dog-parent" versus the number of "pet-owner"- and the eating habits of these owners would be essential for the assessment of the market and would guide the marketers how to work the market for specialized pet food. Finally, future research could be looking at the health of pets in relation to nutrition. As relationship is becoming more meaningful, pet as part of the family, the pet health is becoming more important (there is also increasing obesity, diabetes and dental problems in pets).

Key words:

Functional food; Organic food; Functional pet food; Organic pet food; Pet food purchasing; Anthropomorphism; Dog-human relationship

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1. Introduction

1.1 Background

Humanization—or anthropomorphism—of dogs by their owners is a growing trend in consumer behavior, which affects dog related sales and marketing in some segments of dog owners (Boya et al., 2012). At one end of the spectrum are dog owners concerned about the nutritional value, quality, and freshness of their dogs' food. They are also interested with their dogs' dining experience. This may involve different considerations of the dog owner to the amount of variety they have in their dogs' diets. At the opposite end of the spectrum are dog owners who only seem to take into consideration the price of the food.

Anthropomorphism or personification is the attribution of human characteristics to pets. The word anthropomorphism was first used in the mid-1700s. The word derives from the Greek ἄνθρωπος (ánthrōpos), "human", and μορφή (morphē), "shape" or "form".

Boya et al. (2014) point out the key differences among dog owners in shopping for their own food and shopping for their dogs' food, confirming previous research concluding that dog owners in general are more concerned with the healthiness and the nutritional value of their dogs' food than of their own food (Tesfom and Birch, 2010).

"Functional food" is not a term regularly used by consumers, but the concept is entrenched in the food industry. Functional foods are found in virtually every food category, but not in all segments of the growing market. The definition of "functional food" in legislation is not unitary. It differs from "foods that may provide health benefits beyond basic nutrition" to "foods similar in appearance to conventional food that is intended to be consumed as part of a normal diet, but has been modified to sub serve physiological roles beyond the provision of simple nutrient requirements" (Siró et al., 2008). Functional foods are made to meet nutritional goals and we encounter them from birth to old age (Sprinkle, 2015). The consumption of functional food is not limited to athletes and body builders; functional foods are also consumed by people who want to lose weight. In a sense, pet food specially formulated for certain breeds and activity levels is a functional food.

A recent study by Goetzke et al. (2014[b]) provides evidence to support the claim that health is an important motivation for the consumption of both functional and organic foods. Organic food consumption follows the original North American concept of health: a holistic healthy lifestyle including a healthy diet and sport. The consumption of functional food, however, follows the European approach of health that is shaped by small adjustments to lifestyle to enhance health and to increase psychological well-being: the spa and relaxation concept.

Kumcu and Woolverton (2014) found that households that purchase premium food for themselves also consistently purchase premium pet food for their pets. The researchers discovered an unexpected dimension of age difference in purchasing behavior. People are generally waiting longer to cohabit and have children. They are benefitting from increasing

incomes. These lifestyle changes have altered the way that people look at their pets. Pets are now seen as part of the family. And the pet becomes a life companion. This has implications for the marketing of the pet food products.

There is vast opportunity to commercialize this trend into a range of goods and services for a company that can position itself to gain credibility among this growing demographic (Westbrook, 2014). The market for Pet Care products in 2014 amounts to more than US $98,301 million worldwide and is projected to grow to US $110,168 million by 2019 (Euromonitor International, 2013). Animal Companionship continues to consolidate itself as an integral aspect of life.

In this study "specialized pet food" shall hereafter refer to premium pet food made from or with organic and/or functional ingredients. Within pet food industry it is called A-premium specialized (branded) pet food.

1.2 Problem statement

The main topic of this study is to investigate a possible correlation between human organic/functional food purchase behavior and their pet food purchase behavior.

- Do pet owners who purchase functional and/or organic food for themselves also purchase functional and/or organic pet food for their pets?
- Are differences in bond between dog and their owners influencing the pet food purchases of dog owners? Is the purchasing behavior of "dog-people", "dog-parent", and "pet owner" different?
- Are demographic characteristics also influencing pet food choice?
- What are the consequences of the various relationships between dogs and their owners?

1.3 Objectives and relevance

Firstly, the objective of this research is to identify the usage of special products, such as functional and organic food, by dog owners. Secondly this study will determine whether the owner's own usage of functional and/or organic products influences their pet food purchases. Thirdly, the dog's relationship with the dog owner influences purchasing behavior of pet food by the dog owner.

Earlier research has demonstrated the differences in the relationships and bonds formed between pet owners and their pets (Boya et al., 2014). People with different relationships with their pets displayed differences in shopping behavior.

Research from Tesfom and Birch (2010) found that American pet owners are more likely to buy healthy food for their dogs than for themselves. A study by Herath et al. (2008) and Phuah et al. (2015) determined that demographic characteristics influence purchasing behavior of functional products.

This study looks specifically for a relationship involving functional and/or organic product usage of the dog owner and their willingness to purchase specialized pet food for the pet. This study also looks at the bond of the pet owner with its pet, and if this relationship has influence on the willingness to purchase specialized pet food.

1.4 Methodology

This study uses the methodology of a cross-sectional survey with a single measurement conducted among dog owners in the United States, the United Kingdom, and the Netherlands. A series of questions solicited information regarding:

- The position of the "dog in the family"
- The dog relationship with the owner
- What type of food the dog is given
- If they use functional and/or organic food products themselves
- If they purchase functional and/or organic food products for their pets

1.5 Reading guide

Chapter 2 begins with the theoretical framework. It describes the literature and trends regarding functional and organic food products and the humanization of pet food. Chapter 3 describes the research methodology, the survey, the data collection and analysis, and the review of the hypotheses. Chapter 4 will provide the results and the analyses of the retrieved data. Finally, Chapter 5 describes the conclusions of this study. We challenge the information the industry uses for strategy building and provide recommendations for future research.

2. Literature review

This chapter provides more information concerning the theories and definitions of "functional food products" and "organic food products". It explores societal trends concerning the usage of functional and/or organic food products and pet food. This chapter also provides information about dog-human relationships as the dog being a part of the family. This dog human relationship differs from dog owner to dog owner, and differences seen up to now are explored. This information leads to a conceptual model and hypotheses, which are described at the end of this chapter.

2.1 Functional food

In recent decades, consumers will pay more attention to their food products, which means that one has to understand that food directly contributes to their health (Mollet and Rowland, 2002). Food is not only intended to satisfy hunger or to provide the necessary nutrients, but also to prevent diseases and improve physical and mental well-being (Menrad, 2003). A study by Kaur and Das (2011) notes a range of available definitions of functional foods. The term, first coined in Japan, refers to processed food containing ingredients that aid specific body functions in addition to being nutritious. Functional food should further have a similar appearance to conventional foods, be consumed as part of a usual diet, and claim to have physiological benefits—such as health-promoting or disease-preventing properties—beyond the basic function of the supplied nutrients. The Japanese authorities state that functional foods should be made from naturally occurring ingredients that are not capsuled or powdered, they can be part of a daily diet, and they should enhance one's biological processes or mechanisms to prevent or control a specific disease (Hardy, 2000).

Functional foods must have chemical compounds derived from or present in plants, animal or marine sources. A functional food does not replace a complete meal for food consumers. According to United States Food and Drug Administration functional food should be:

> "formulated to be consumed or administered eternally under the supervision of a physician and (...) is intended for the specific dietary management of a disease or condition for which distinctive nutritional requirements, on the basis of recognized scientific principles, are established by medical evaluation" (Hardy, 2000).

According to Doyon and Labrecque (2008) a functional food is, or appears to be, similar to a conventional food

One could say that the success of functional foods is influenced by factors such as the consumers' focus on general well-being, the health benefits for common health complaints, and the possibility of mass distribution and market position. The effective communication of

health benefits, the extension of existing brand/food companies, and focus on taste convenience and appropriate pricing are driving factors in the usage of functional food products (Kaur and Das, 2011; Benkouider, 2011).

A recent study in Malaysia found that a socio-demographic characteristic influences the consumer knowledge and purchasing frequency of functional foods (Phuah et al., 2015). Functional food consumers are mainly middle or older aged consumers who are wealthy, married, and highly educated. The gender of consumer had no effect on consumption of functional food products (Table 1).

Author	Gender	Age	Married	Income	Education	Functional foods
Phuah et al. (2005)	No relation	Middle /old	Yes	High	High	Yes
Herath et al (2008)	No relation	Higher age	-	Low(er)	Less	Yes
	-	Young	-	High	High	No

Table 1: *Relation demographics and usage of functional food products.*

Herath et al. (2008) found that receptiveness towards functional foods increases with the age of the consumer. In this study from Herath the incomes of the group were lower. This lower income might have been caused by age and having been eating less healthy foods in the past. The other, less receptive group was typically younger, attained a higher level of formal education, and resided in higher income households. This group had the tendency to be less concerned with health issues and diseases, perhaps because they were younger and more often preferred a healthy meal over conventional food.

The aim of a study by Goetzke and Spiller (2014[a]) was to investigate whether functional food consumers have the same understanding of health and well-being as organic food consumers. This study found that both consumer groups' health and well-being was very important to them, although the way they sought to achieve health and well-being was different. Organic food consumers are more driven by physical and spiritual activities, whereas functional food consumers frequently purchase these products for beauty reasons and passive disease prevention. Organic consumers have an active lifestyle, what means these consumers go to the gym or walk around the block, do sports, whereas functional food consumers have a more passive lifestyle what means they like to consume media sports more than doing it themselves.

- Hypothesis 1: Consumers who use functional foods themselves are willing to purchase specialized pet food.

2.2 Organic food

There are many definitions and misconceptions as to what distinguishes organic food from organic agriculture. National, regional and private voluntary standards utilize different definitions. The United States Department of Agriculture (U.S.D.A., 1995) defines organic agriculture as:

> "an ecological production management system that promotes and enhances biodiversity, biological cycles and soil biological activity. It is based on minimal use of off-farm inputs and on management practices that restore, maintain and enhance ecological harmony".

IFOAM (International Federation of Organic Agricultural Movements) (2008) provides the following definition:

> "Organic Agriculture is a production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic Agriculture combines traditions, innovation and science to benefit the environment and promote fair relationships and a good quality of life of all involved".

The Codex Aliment Arius, third edition (2007) provides a very long list of guidelines for the production, processing, labeling and marketing of organically produced foods. These and other definitions do not make it easy to understand what can be seen as an organic product. This has prompted the National Organic Standards Board of the USDA to devise a new definition focusing on how organic food should not be produced rather than how it should be produced. By this definition, organic food must be produced without the use of synthetic fertilizers and pesticides, genetic engineering, growth hormones, irradiation and antibiotics.

Organic products are usually perceived as expensive but healthful products with fewer toxins, such as fertilizers and pesticides, without radiation and genetically modification, and without chemicals" (Lim et al., 2014). These qualities are the motivations behind some consumer segments' high level of willingness to purchase and use organic foods. These are signifiers of health orientation and social responsibility behavior (Nasir and Karakaya, 2014). Nasir and Karakaya discovered the existence of three segments or clusters that purchase organic foods: a "favorable cluster", a "neutral cluster" and an "unfavorable cluster".
Favorable cluster consists of consumers who hold favorable attitudes toward organic foods, the neutral cluster consists of consumers who have neutral attitudes towards organic foods, whereas the unfavorable cluster have negative attitudes towards organic foods.
The favorable cluster or segment was mostly female (52.5%), young (49% age group 18-25 years and 25% in the age group of 26-35 years), and well educated (87% have either a college or graduate degree). In terms of income, most respondents in this segment belonged to the low (38.5%) and middle (35.3%) income groups where 25% belonged to the high income segment. This was expected because the average age of this group is very low.

Consumers of organic products exhibit loyalty to organic products. In a study from Lee and Goudeau (2014) the standard hierarchy of organic foods was studied to find what was important to purchase organic food products. Denver and Christensen (2014) found significant differences between Organic-first and Product-first consumers regarding the belief in the benefits of organic products. Difference between these types of consumers is the way they purchase food product; Organic-first consumers will purchase organic products first before purchasing other products.
Other studies support the assertion that organic products are also bought due to health reasons, environmental concerns, and nutritional value and taste concerns. Studies from 2002 by Bourn and Prescott, Fotopoulos and Krystallis, and Zanoli and Naspetti, demonstrate that organic products are also bought for health reasons, environmental concerns, and nutritional value and taste concerns. Makatouini (2002) is mentioning that the usage of organic product one also takes into account the consideration of ethics and animal welfare.

- Hypothesis 2: Consumers who use organic foods themselves are willing to purchase specialized pet food.

2.3 Humanization of pets

Changes in society, such as shifting technological, economic, and cultural changes in humans needs, are shaping the type of relationship people have with their pets. Relationships ranging from companionship to friendship (Holbrook, 2007; Cavanaugh, 2008) to unconditional love and affection are even resulting in in anthropomorphism (Boya et al., 2012).

To understand the dog-human relationship Dotson and Hyatt (2008) described seven dimensions that comprise the construct of dog-companionship. Starting with "Symbiotic relationship", "Dog-Oriented Self-Concept", "Anthropomorphism", "Activity/Young", "Boundaries", "Specialty purchases", the highest dimension is called "Willingness to Adapt". Dimensions are graded by the intention of the relationship—the bond—between owner and dog. It was found that the dog owner's gender makes a considerable difference in the degree of dog-companionship experience. Women outscored men across all mentioned dimensions. This might be caused by the fact that women are usually the primary caregivers towards dogs.

Owners with higher education have embraced the concept of human-dog relationship and see dogs more like companions rather than dogs to be owned. Ownership of a pure breed dog, ownership spanning a considerable length of time, and the ability to spend time on a dog can have strong influences on the dog-companionship dimensions. Increased levels of dog-companionship were especially evident where more financial and emotional investments were made (Dotson and Hyatt 2008).

Mosteller (2008) looked at the role of pets in people's lives. Results from this study suggest that consumers who perceive their pets to reinforce their self-concepts, elevate their social status and be integrated members of family or social networks are associated with positive pet-human relationships.

In a study by Boya, Dotson and Hyatt (2012) three clusters were observed after analyzing shopping-related behavioral items. These factors and the relationship between owner and dog assign the person to a certain cluster: Strongly Attached Owners, Moderately Attached Owners and Basic Owners. It was found that "Strongly Attached Owners" attributed "human characteristics" (anthropomorphism) to their dogs where Basic Owners did not. The Strongly Attached Owners tended to treat their dogs as people and see themselves more as a "pet parent". They spoil their dogs, celebrate their birthday and even see the dog as their best friend.

Differences were also found in the way the dog ownership is perceived with "Structure and Discipline" and "Boundaries/Physical Proximity" factors. These factors are looking at the hierarchy between man and dog such as what the dog is allowed to do. Within the cluster of "Strongly Attached Owners" the dog is sometimes allowed to sleep on the bed. Comparisons of the importance of factors based on gender revealed differences among some of the factors investigated. "Dog-Oriented Lifestyle"," Anthropomorphism" and "Appearance" differ from male to female, whereas "Boundaries/Physical Proximity" and "Structure and Discipline" yield similar results for both genders (Dotson and Hyatt, 2008). Looking at other demographic characteristics as income, age and level of education as well as marital status, no significant differences were seen between the clusters.

In a study by Kumcu and Woolverton (2014), it is stated that premium human food consumers with higher education and incomes are more likely to purchase premium pet food. They want to use the same level of food standards for their pets as they do for themselves.

Demographics showed that households without children (mostly associated with pet humanization, Kumcu and Woolverton, 2014) are more likely to enter the premium pet food market. Other demographics such as income, education and age have little impact on purchases of premium pet food.

One exception can be made for age: the study reveals a surprising age cohort effect existing for owners under the age of 30. These consumers are more likely to purchase premium pet food, despite budget constraints. This might be caused by growing up in a time when premium food for humans as well as for dogs is readily available and therefore an integral part of life. Kumcu and Woolverton (2014) see a trend of viewing pets as members of the family and they also see that people are waiting longer to cohabit and have children. This effect of shifting attitudes among the younger aged may have an even larger impact over time as their income and education increases.

The study of Stoeckel et al. (2014) is from a different nature. Stoeckel examined fMRI (functional Magnetic Resonance, Imaging), brain activation patterns as mothers viewed their own child or dog and unfamiliar children or dogs. The results demonstrate that the mother-

child and the mother-dog relationship have shared aspects of emotional experience and patterns of brain function, although there were also brain–behavior differences that may reflect the distinct evolutionary underpinning of these relationships.

- Hypothesis 3: Dog owners where pets are considered as part of the family are willing to purchase specialized pet food

- Hypothesis 4: Dog owners eating functional and/or organic food products with stronger bond with their pets are more willing to purchase specialized pet food.

2.4 Trends in human food

A trend is a development in a certain long-term direction. Trends are often specified and seen by trend watchers and last longer than a season. The social and economic as well as the technological transformations that have occurred in the past decade have made changes in our food habits. In addition to the economic crisis still in progress, the changes in lifestyle, as well as the changes in the way we look at health can be reflected in the changes in the healthiness of products and the other changes in course of time.

The reduced attention for home cooking and increasing use of convenience foods at home and so eating outside the home (Buckley et al., 2007) is an important visible change. When we look at age, literature shows that younger adults have a tendency to devote less time in preparing food and more frequently eat outside the home (Casini et al., 2015; Brunner et al., 2010), which may be caused by the lifestyle of younger generations with greater social and working activities outside of home (Casini et al., 2013).

Socio-demographic characteristics show that consumers with a higher income and education level consume more low fat foods, high fiber foods, as well as a fruits and vegetables. Low income and education often results in a high energetic intake (Trichopoulou et al., 2002). An explanation for this could be that lower incomes cannot afford good nutritional foods and good level educated consumers are more informed about what to eat to keep you healthy (Chrysochou et al., 2010).

Looking at gender, women eat fruit, vegetables, fish and chicken more often than men. Instead, men prefer the hedonistic and flavor aspects of foods and eat bigger portions of meat, potatoes, bread and alcohol (Prättälä et al., 2007). Health is an aspect that middle and

elderly aged people are more concerned with. They are more health oriented, because they are at a greater risk of becoming ill (Verbeke, 2005).

The last factor, marital status and children, shows that people intend to eat healthier when there is a family-like social construction. Especially the presence of children is correlated with a greater consumption of fruit and vegetables and therefore a healthier diet. This can be explained by the fact that parents pay more attention to a healthy diet, because they are aware that their choices influence their children's future state of health (Mancino et al., 2004).

In a study from Hughes (2011) the following trends for the food industry were observed. The consumer wants to reduce its weight; it wants to improve digestive health. They want to eat healthy with fresh and minimally processed foods, use food intake to manage their overall health and even at the same time improve appearance. Last but not least they seek food products that are compatible with their busy lifestyles.

For example: food they can eat "on the move" without "feeling guilty". They want to offer their children "fun to eat" food that is also nutritious and safe. They want to purchase and prepare food that has been produced in a manner that contributes to the well-being of the planet and its inhabitants

In Food Technology Magazine (2015), Sloan shows a "Top Ten" Food Trends as envisioned by her. Eating alone, home meals for millennials, a new definition of health, and a demand for true transparency are among the most important consumer trends. Unprecedented changes in lifestyles and eating patterns are seen. A greater demand for healthier fare and more ethical options and consumers' desire to know more about the foods they choose will cause dramatic changes in the way consumers are looking at and are purchasing food.

Euromonitor (Westbrook, 2012) is reporting trends such as searching for value, fighting against obesity, experience based consumption, the rise of social responsibility, the chemical backlash etcetera. Trends that are changing the ways consumers are purchasing and thus changing society.

2.5 Trends pet food

The world of pet food is shows changes in purchasing behavior. One trend that has been observed is BARF (Stogale, 2001). BARF stands for: Bones And Raw Foods or Biologically Raw Foods. Pet owners want to feed home-prepared diets, exclusively or partially. The owners want more than simply convenient, minimally adequate, and highly processed food with no variation in content and taste; they want optimum nutrition for their pets. In a study by Dillitzer et al. (2011), the interest in bone and raw foods was investigated. This increased usage of BARF led to more vet-consultation in Germany. Home-made food has the risk of being imbalanced in terms of nutrients such as vitamins and minerals.

A study by Simonsen et al. (2014) investigated the attributes that influence the decision to choose natural and organic ingredients. The ingredient's source appeared to be more important than other attributes such as price, package size, product recommendation, and product formula. The study concluded that more research needed to be done to better understand consumers' ability to distinguish between organic and all natural, and what price point will change the opinion of the customer.

Looking at trends in the consumer segment, it was found that there are different segments of dog owners based on the nature of their relationship with their pet, and how they see themselves in relation to their pet (Boya et al., 2014). Results of that study showed that there were distinctly different dog food-related choice patterns driven by the nature of the relationship between owners and dogs.

"Dog-people" are more concerned than other dog owners with the health/nutrition, quality and freshness of their dogs' food, including taste and diversifying diets. They have the strongest bond with the dog.

"Pet-owner", on the other end of the spectrum, does not look at the food choice criteria very often, with the exception of price and type of store. Convenience and saving money is an important criterion. A middle group is formed by "dog-parent", who shows a tendency towards anthropomorphism in the dog related market, but do not see the dog as an extension of themselves, like "dog-people" do. The dog is their buddy.
"Dog-people" are less price conscious when purchasing their dogs food, than they are when purchasing their own food. (Tesfom and Birch, 2010).

The cluster "Pet-owner" is less brand loyal for dog food as well as for their own products and less concerned about purchasing healthy food for their dogs or purchasing food for themselves. "Pet-owner" is not inclined to consult a care professional when purchasing pet food as they will not consult one about their own food. These characteristics show that different segments display different ways of purchasing behavior.
Thomas et al. (2011) also looked at trends in the pet food market, and found that there was a growing variety in diets and product price valuation with an increased concern for pets. Consumer demand asking for premium brands to benefit animal health. Dog owners are generally more concerned with the healthiness and nutritional value of their dogs food than

they are with their own food (Tesfom and Birch, 2010*)* and they are more likely to follow recommendations of their veterinarians (even though they do not listen to their own doctor when it comes to food choice).

An exclusive in-depth survey of hundreds of pet industry executives from around the world by Facts/WATT (Lummis, 2007) demonstrates industry trends towards more: treats, usage of human ingredients, and hyper-premium product. The trends mentioned include: convenient packaging, cultural shifts, and humanization of pets, pet care and even pet fashion. The changes in demographics are: smaller households with less children and growth of organic pet food market.

Another trend evidenced by Petfood Industry Magazine (2009), Jessica Taylor stated in an interview that "Gourmet" is not reserved for fine-dining human food. Fresh and familiar ingredients normally only used for human food products are making their way into the recipes of super-premium and premium pet foods. Educated pet owners want fundamental changes to the quality of pet food and the way it is produced. Pet food needs to be recognizable as food from your own plates. Different "dinners" for the pet on a daily basis are also desired.

2.6 Other trends

In the following section the constructs influencing the Humanization of Pet Food will be discussed and I will also mention a few other trends that are visible at this time.

In studies by Jyrinki (2011) three dimensions of identity constructions were found. The first is "Personal Cultivation" where the pets are there to provide consumers personal peace of mind and harmony. The second dimension is "Sociality to Consumers", or a means to connect. The pet is seen as a social connection to the outside world. The third dimension is "Emotional Attachment". The pet, as an object of devotion, is close to the consumer's heart and personal appreciation. These different dimensions might result in different purchasing behaviors.

A study by Murphy et al. (2011) looked into the obesity of pets and pet owners. Human-focused research has shown that a larger size of a plate or bowl causes consumers to eat significantly more. Results of pet tests are consistent with this data and emphasize the need for owners to standardize according to the products information of the pet food manufacturer, if they do not want to over-feed their pets.

Ridgway et al. (2008) analyzed results from a survey that suggest a relationship between tendencies towards excessive buying for and spending on one's pet. This could relate to their very strong attachment to pets and could indicate that the pets are treated as the owners' "children". Pet parents indicated in the survey that they felt better when they made numerous purchases for their pets.

This underlying research demonstrates that consumers are eating healthier, choosing more organic products, and choosing more functional foods. People are also increasingly choosing products that are healthy, easy to prepare, and eatable outside of home. All of these trends are visible changes that influence the market place. Trends in pet food are demonstrably similar to these changes seen in human food and are also becoming more convenient and health-related. Some pet owners place more importance on one aspect of products, such as the easy usage of pet food, while others are more concerned with the health aspects of food.

2.7 Combining trends into a Conceptual Model

This underlying study aims to investigate mutual influences on the customers' decisions to use organic and/or functional products for themselves and look for these types of products for their dogs. The study also considers whether the consumer's belief that a dog is part of the family influences their purchase of certain pet food and whether the dog's bond with its family influences purchasing behavior.

If we translate these hypotheses into a model the following conceptual model can be made:

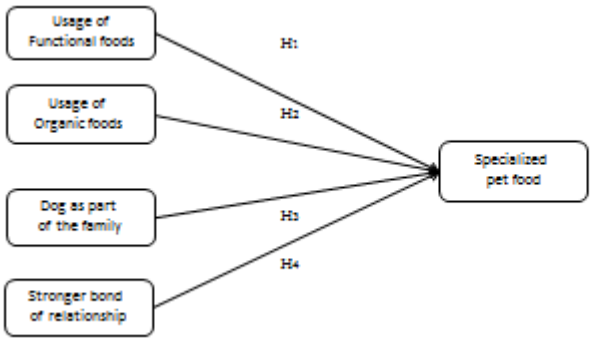

Figure 1*: Conceptual model Humanization of pet food*

H	Dimension	Effect	On dimension
1	Usage of functional foods	Positive	Usage of specialized pet food
2	Usage of organic foods	Positive	Usage of specialized pet food
3	Pet being part of the family	Positive	Usage of specialized pet food
4	Stronger bond of relationship	Positive	Usage of specialized per food

Table 2: *Hypotheses Humanization of Pet Food*

3. Methodology

This section describes the research design that was used for this study. It provides information about the design and procedure, the questionnaire, the instruments used, and the data analysis.

3.1 Design and procedure

A cross-sectional survey design with a single measurement was employed.

Data was collected in three different countries: the United States, the United Kingdom, and the Netherlands. Participants from the United States and the United Kingdom were contacted with help of an available database of e- mail addresses from Survey Monkey. This was a commercialized activity. The survey in the Netherlands was sent to colleagues, friends and acquaintances and was spread via Facebook. The questionnaire was completed via Survey Monkey.

The survey was conducted through a self-administered questionnaire with a sample set of 284 dog owners. The full dataset was collected in the United States (105), the United Kingdom (104) and the Netherlands (75). Only fully completed survey results are part of the analysis and only dog owners were asked to complete the questionnaire.

Before disseminating the survey, the questionnaire was sent to four participants from the Netherlands to ensure that the questions asked in the survey were intelligible. The comments of the first four participants were processed in the questionnaire. Next step was asking another two additional Dutch dog owners to take the survey. All the remarks on the questionnaire were taken into account. In order to have a wide demographic range for the validation process, the six participants were of different age, with and without children, some were married others were single. The questionnaire was adapted to the local currencies and the country educational systems.

In the survey definitions were given on functional and organic food to let the participants have the same understanding.

Only earlier, validated questions taken from other research were used for this survey.

3.2 Survey / Questionnaire

The questionnaire consisted of 7 sections with in total 48 questions (111 including sub questions, see appendix I). The sections were divided as follows:

1. *About your dog*, questions looking into demographic characteristics of the dog
2. *About the food you feed your dog*, questions about eating and eating habits
3. *About the dog in the family*, questions regarding what the role or bond is of the dog in the family
4. *About your dog's healthiness*, questions about the dog's health
5. *About organic and functional foods*, what kind of products does the owner consume
6. *About consumption of foods*, Measures attitudes on Genetically Modified Organism (GMO) products, usage of pesticides, artificial flavors preservatives etcetera
7. *About you*, questions on the demographics of the dog's owner

Questions were to be answered with a yes, a no and/or sometimes, or a 5-point (Likert) scale that ranged from 1 (= strongly disagree) to 5 (= strongly agree), or 1 (= not (at all) important) to 5 (= very / extremely important).

Several questions were multiple choice. These are questions where one choice needed to be made and there is a range of questions that could be answered on a 6-point scale from 1 (= always) to 6 (= never).

Explanation of Survey

The "About your dog" section one asks about demographic characteristics of the dog. These questions were used in earlier research by Dotson and Hyatt (2008) where dog-companionship was found to differ depending on pure breed and the time one has owned the dog. Dotson and Hyatt's study moved researchers a step forward in understanding dog-companionship from a consumer research point of view.

In the next section, section two, questions about feeding characteristics are asked. These questions were developed and previously used by the University of Glasgow. Questions out of the survey are similar stated as we look how they are posted in surveys looking at purchasing behavior of human products. (Hopman et al., 2006 and Goetzke et al., 2014[a+b]).

Another similar study was conducted by Shine et al. (1997), where questions were asked about the usage of labels on food products. A high level of awareness of nutrition labeling is evident among consumers, with just over half of the sample utilizing nutrition labels.

The third section of the survey asks which role participants think the dog has in the family. From this range of questions it can be concluded what type of human dog relationship exists and to what cluster this consumer belongs to, having a dog as a friend, a companion or even as a child. The questionnaire was used by Dotson and Hyatt (2008) with the aim of gaining

understanding on the subject of "dog-human companionship". It was found that certain demographic characteristics—such as gender, age, and education level—relate to the type of relation the owner has with his dog. These are called "dog-companionship dimensions".

The findings demonstrate a positive relationship between the gender of the dog owner and their bond with the dog. Since women usually seemed to be the primary caregivers for dogs Dotson and Hyatt (2008), stronger companionship was observed. Younger people demonstrated stronger companionship, possibly due to a generational effect or due to more openness to the interspecies connection and greater flexibility in their lifestyles. Marital status and the presence of children also appeared to impact the dog-human relationship. A relationship that may influence the way people are purchasing their pet food.

Section four questions about the dog's healthiness concern the way one sees the dogs' weight or overweight, the risk of overweight and how one is handling this dogs' overweight. Questions were earlier used by the Pet Food Manufacturing Association and developed by the University of Glasgow.

In section five, "About organic and functional foods", dog owners are asked if they purchase functional and organic products and about their own eating habits. These can be combined with the food choices one makes for their pets.
Goetzke et al. (2014[b]) orchestrated one of the first attempts to combine organic and functional food consumption citing the fact that both trends are initiated from consumers' awareness about the health issues around food. Results show that although health is an important aspect for both types of consumers, they have different understandings of a healthy lifestyle. In this study a relation between purchasing functional and/or organic products with dog human companionship relations.
The number of examples of types of functional and organic food was narrowed to seven or eight product examples. So usage of only a few products was asked. Previous research has shown that the measurement of consumer attitudes and belief structures becomes more reliable and predictive when there is a focus on specific products rather than broad product categories. Bredahl (1999) also concluded in his study that having more knowledge of the product (in his case GMO products) influences the choices of consumers to use the product, however, having more knowledge about the product does not necessarily cause the consumer to like the product more.

The sixth section is about consumption of foods and how one perceives the use of pesticides in human and pet food, Genetic Modified products (GMO), flavors used in human food and pet food, the trust in local products, if one purchases organic products or not. These questions were used in a study from Janssen et al. (2009).

In the last section, participants are asked to give demographic characteristics. These are standard questions are in numeral questionnaire surveys (Herath et al., 2008; Tesfom and Birch, 2010; Goetzke et al.., 2014[a+b]; Nasir and Karakaya, 2014).

The questions for the questionnaire are arguably validated by their earlier use in the published scientific researches listed in Table 3.

Publisher	Publication:
Dotson, M.J. and Hyatt, E.M. (2008).	Understanding dog-human companionship
University of Glasgow	University of Glasgow Nutrition Questionnaire in conjunction with the Pet Food Manufacturing Association
Hopman et al. (2006)	Food questionnaire for assessment of infant gluten consumption
Goetzke et al. (2014[a])	Health-improving lifestyles of organic and functional food consumers
Janssen et al. (2009).	Is there a promising market "in between" organic and conventional food? Analysis of consumer preferences
Shine et al. (1997)	Consumer use of nutrition labels
Murphy et al. (2011)	Size of food bowl and scoop affects amount of food owners feed their dogs
Herath et al. (2008)	Who consumes functional foods and nutraceuticals in Canada? Results of cluster analysis of the 2006 survey of Canadians' Demand for Food Products Supporting Health and Wellness
Tesfom and Birch (2010)	Do they buy for their dogs the way they buy for themselves?
Nasir et al. (2014)	Consumer segments in organic food market
Goetzke et al. (2014[b])	Consumption of organic and functional food. A matter of well-being and health?
Bredahl (1999)	Consumers' Cognitions With Regard to Genetically Modified Foods. Results of a Qualitative Study in Four Countries

Table 3: *List of publishers used for building the questionnaire*

3.3 Data analysis

Analyses were conducted using IBM- SPSS statistic 23 for Windows (Vocht, 2013).
Data extracted from the database of Survey Monkey Data for the three different countries have been combined into one data file. All of the instruments were assessed for their validity using Factor Analysis. To verify and further reduce the number of items, the Monte Carlo PCA (Principal Component Analysis) for Parallel Analyses was employed to check if the number of components given by the Factor Analysis with "eigen value" greater than 1 is correct. Components of the Factor Analysis were analyzed on correlation. Groups were created if the factor in the Factor Analysis produced a factor coefficient above 0.4. If a correlation was found near 0.7, a Cronbach's Alpha (α) test was performed before groups of questions were combined into one item (Schmitt, 1996). Cronbach's α is performed to measure the internal consistency and reliability of the results. Cronbach's α will generally increase as the inter-correlations among test items and for that reason it is also known as the internal consistency estimate of reliability of test scores. Groups of items were combined into new items if factor analyses results checked by a Cronbach's α allowed the possibility to combine.
For the analyses of the "dog in the family" results, three distinct groups of dog owners were defined based on their relationship with their dogs. These groups were named: "dog-people", "dog-parent" and "pet-owner", where the closest bond to the dog is observed in the cluster of "dog-people" and the lowest bond is evident in the "pet-owner" cluster.

To test the hypotheses as stated in table 2 paragraph 2.7 correlation analyses and linear regression with ANOVA were performed.

4. Results

In this chapter the research results will be presented. The chapter begins with the presentation of the results, after which the data will be analyzed and explained in further detail.

4.1 Sample characteristics

4.1.1 Demographics dog owners

The Sample characteristics on demographics of the dog owners are presented in table 4. Additional information can be found in Appendix II.

What is your Gender?	Frequency	Percent		Into which of the following categories does your total annual household income fall?	Frequency	Percent
Male	148	52.1		Less than $ 17.500	20	7
Female	136	47.9		$ 17.500 - $ 35.000	60	21
				$ 35.000 - $ 52.500	50	18
Total	284	100		$ 52.500 - $ 70.000	57	20
				Over $ 70.000	60	21
What is your Age?	Frequency	Percent		Prefer not to answer	37	13
18-24 years	30	11				
25-34 years	51	18		Total	284	100
35-44 years	74	26				
45-54 years	66	23		Family Type	Frequency	Percent
55-64 years	50	18		Single Male	41	14
65-74 years	12	4		Single Female	35	12
Above 75 years	1	0.4		Couple with children	127	45
				Couple without children	59	21
Total	284	100		Single Male with children	3	1
				Single Female with children	19	7
What is the highest level of education you have completed?	Frequency	Percent				
Less than high school	12	4		Total	284	100
Graduated from high school	80	28				
Few years of college	56	20		Country	Frequency	Percent
Graduated from college	80	28.		United States	104	37
Some graduate school	9	3		United Kingdom	105	37
Completed graduate school	47	17		Netherlands	75	26
Total	284	100		Total	284	100

Table 4: *Demographic characteristics of the interviewed population*

As the Survey was sent via a commercialized route in the United States and the United Kingdom, the number of respondents was predetermined. An agreement was made with Survey Monkey for 100 fully completed responses from dog owners from the United States and 100 from the United Kingdom. For the Netherlands, other methodology was employed. Family, friends, and colleagues were asked to complete the survey. The survey was sent via a link on Facebook and yielded 75 fully completed responses.
Results show that a comparable number of males and females participated in the survey and all age categories are represented.
Demographics graphs are shown in the appendix III.

4.1.2 Demographics dogs

The demographics of the dogs belonging to the surveyed participants are found in the next table.

What is the age of your dogs?	Frequency	Percent		Has your dog been neutered / spayed?	Frequency	Percent
Under a year old	10	4		Yes, neutered (male)	79	28
1 to under 3 years old	84	30		Yes, spayed (female)	125	44
3 to under 5 years old	76	27		No	80	28
5 to under 7 years old	37	13				
7 to under 9 years old	28	10		Total	284	100
9 to under 11 years old	23	8				
11 or more years old	26	9		Is your dog Pure Breed or Mixed Breed?	Frequency	Percent
Total	284	100		Pure Breed	196	69
				Mixed Breed	88	31
How many dogs do you currently own?	Frequency	Percent				
				Total	284	100
1	198	70				
2	71	25		For about how long have you owned or looked after your dog?	Frequency	Percent
3	8	3				
4	1	0.4				
>4	6	2		Less than a year	12	4
				1 to under 3 years	89	31
Total	284	100		3 to under 5 years	77	27
				5 to under 7 years	37	13
What gender is your dog?	Frequency	Percent		7 to under 9 years	23	8
Male	161	57		9 to under 11 years	21	7
Female	123	43		11 or more years	25	9
Total	284	100		Total	284	100

Table 5: *Demographic characteristics of the dog population*

The number of purebreds is higher than the number of mixed breeds in this study. Most dog owners have a male dog (161) of which half are neutered (79). The male dog population which is neutered might be a higher number in reality. The number of female dogs (123) and spayed dogs (125) are conflicting. This is likely due to some participants mixing up the terminology of spayed (female dog) and neutered (male dog).

More details on the demographics and the graphs are shown in the appendix IV and V.

4.2 Factor Analyses

To reduce the number of items coming from the questionnaire, a factor analysis was conducted on the existing data from the survey. The KMO (Kaiser-Mayer-Olkin) test came to a score of 0.786 and the Bartlett's test had significance (Sig.) of $p < 0.001$. This made it possible to conclude that the component matrix was given enough reliability to reduce the items with correlations mentioned in the Factor Analyses matrix. A KMO test with results from above 0.6 in a scale of <0 – 1> is seen as a reliable result. This combined with Bartlett's significance of below 0.05 also confirms that the test results are reliable.

The number of components with an "eigen value" of greater than 1 came to 40, which gave an explanation of 75% of the variance in this dataset. The Scree Plot did not produce an exact so-called "elbow". No direct conclusion could be drawn out of that possibility to reduce the numbers of items.

To look for further reduction possibilities of the number of items, a Monte Carlo PCA (Parallel Component Analysis) for Parallel Analysis was performed. According to this analysis, the number of components should be brought back to 28.

The next check was the Component Matrix. The Component should have at least four or more items to be useful for further analysis. If the number of components is reduced to 10, those 10 components would only explain 46 % of the total variance. The Component Correlation Matrix delivered low correlation results, which indicate that there is low correlation between the components.

According to these results, the next step was to combine the groups of questions and look for possible correlations within groups that were strong enough to reduce the number of items. The results of the used factors are checked by the Factor Analyses which results can be found in Appendix VI. The reduction results are displayed in the following sections.

4.3 Functional or organic products consumption by dog owners

To assess whether the dog owners consume functional or organic products, questions were asked about their usage of these types of products. Likert Scale questions were used.

Participants who consumed the cited functional products answered with a Cronbach's α of 0.916 on the usage of functional food products. For the organic food products an α of 0.965 was found.

	Cronbach's α	Cronbach's α based on Standardized Items	Number of items
Functional foods	0.913	0.916	9
Organic foods	0.961	0.965	8

Table 6: *Reliability Statistics usage of functional and organic foods*

According to these results, the questions on usage of functional products and the usage of organic products were combined to two separate new items, one on organic products, one on functional products. This is allowed according earlier research from Carifio and Perla, (2008).

The correlation between the combined items of the usage of organic products compared to functional goods is: $r(284) = 0.662$, $p<0.001$.

4.4 Feeding results of the dog

In respect of the type of pet food the dog owner gives to their pet, a negative correlation was observed in the purchase of A-premium specialized (branded) products by the dog owners and the purchasing of other, not an A-premium specialized (branded) pet food products: $r(284) = -0.797$, $p<0.001$.

In respect of whether dog owners who give their dogs A-premium pet food also give them organic and/or functional products, results showed low significant correlations. No significant correlation was observed in usage of non-A-premium pet food products and the usage of functional and/or organic products by the dog owners.

	Dogs	correlation
A-premium pet food products (branded)	Eating organic pet food	0.186**
	Eating functional pet food	0.182**
Other pet food products (not branded)	Eating organic pet food	-0.021
	Eating functional pet food	-0.042

Note, * p <.05, ** p <.01, *** p <.001, N=284

Table 7: *Eating organic and/or functional pet food and brand relation*

The questions about the usage of organic or functional pet food were answered positively by 102 participant for organic pet food and 107 for functional pet food. A control question on this subject returned contradictory answers for three of the participants.

	N	Percentage
Organic pet food	102	35.5
Functional pet food	107	37.3

Table 8: *Dog's getting organic or functional pet food*

Correlation between both clusters: r (284) =.857, p<.001.

4.5 The role of the "Dog in the Family"

The survey instrument contained twenty-five Likert-scaled questions designed to measure various aspect of the dog-companionship of dog owner with its dog. These statements/questions came from a study of Boya et al. (2012). Results of the survey questionnaire about the dog in the family were analyzed and given a Cornbach's α of 0.933.

The "dog in the family" results were combined to one new item for the analyses.

As found in previous research (Boya et al., 2012, 2014), a meaningful difference can be made, based on the psychographic characteristics related to the nature of the dog owner's relationship with his or her dog. For this reason the population was divided into three clusters of "dog-people", "dog-parent" and "pet-owner".

Clusters distribution is made under the following conditions; the average responses of the twenty-five Likert questions were combined to one item. This item results was divided into three equal clusters:

Cluster	Average result Likert questions
"dog-people"	1-1.80
"dog-parent"	1.81-2.80
"pet-owner"	> 2.81

Table 9: *Clusters of dog owners.*

With cluster frequencies of:

Cluster:		N	Mean	St. Dev.	Var.
"dog-people"	1	87	1.56	0.309	0.096
"dog-parent"	2	143	2.47	0.294	0.088
"pet-owner"	3	54	3.53	0.364	0.133
Total population		284	2.39	0.749	0.560

Table 10: *Clusters of dog owners.*

4.6 Assessing the results

In this section the results will be discussed and the correlation and regression analysis of the items of the conceptual model.

4.6.1. Functional and organic products

Correlating the usage of the participants of organic and functional products with the usage of organic and/or pet food is shown in the next table:

	Dog eating organic products	Dog eating functional products
Dog owner eating organic products	0.475**	0.483**
Dog owner eating functional products	0.547**	0.534**

*Note, * p* <.05, ** *p* <.01, *** *p* <.001, *N*=284

Table 11: *Correlation usage of organic and/or functional products by pets and their owners*

Regression analyses of this correlation gave the following results:

Human products	Dog food	R	R-square	F	Sig.
Organic products	Organic products	0.475	0.226	82.371	0.000
Functional products	Functional products	0.547	0.299	120.349	0.000
Organic products	Functional products	0.483	0.239	85.826	0.000
Functional products	Organic products	0.534	0.285	112.569	0.000

Table 12: *Regression usage of organic and/or functional products by pets and their owners*

Significant relation results were shown between the usage of organic and/or functional products by the dog owner and the usage of functional and/or organic pet food. Functional products used by dog owner shows slightly higher result than the organic product users.

4.6.2. Dog as "Part of the Family"

Analyses of the item "dog in the family" showed significant relation

	Dog eating organic products	Dog eating functional products
Dog in the family	0.475**	0.483**

*Note, * p* <.05, ** *p* <.01, *** *p* <.001, *N*=284

Table 13: *Correlation usage of organic and/or functional products and dog being a part of the family*

Results of the regression analyses are shown in Table 14.

	Dog food	R	R-square	F	Sig.
Dog in the family	Organic products	0.435	0.189	65.770	0.000
Dog in the family	Functional products	0.426	0.181	62.510	0.000

Table 14: *Regression usage of organic and/or organic products by pets and being part of the family*

4.6.3. Relationship cluster results on usage of functional and/or organic products.

The results of the "dog in the family" item could be divided into three clusters. The first cluster "dog-people" is a group of dog owners who see their dogs as their own child, highly bonded relationship.
Third cluster "pet-owner" is a group of dog owners who see the dog as a companion animal. The second cluster the "dog-parent" cluster sees the dog not as a child; still a highly bonded relationship is existing (Boya et al., 2014) the dog is their buddy.

Results in table below show that a stronger bond between dog and its owner relates to a higher correlation between the usage of organic and/or functional products by pets and owner cluster.

Cluster		N	Dog eating organic products	Dog eating functional products
"dog-people"	Organic products	87	0.558**	0.570**
	Functional products		0.510**	0.528**
"dog-parent"	Organic products	143	0.349**	0.359**
	Functional products		0.478**	0.453**
"pet-owner"	Organic products	54	0.127**	0.106**
	Functional products		0.299**	0.193**

Note, * p <.05, ** p <.01, *** p <.001, N=284

Table 15: *Correlation usage of organic and/or functional products by pets and owner clusters*

Regression analyses on the three clusters "dog in the family", "dog-people", and "dog-parent" and "pet-owner" are mentioned in Table 15.

Cluster	Human products	Dog food	R	R-square	F	Sig.
"dog-people"	Organic products	Organic products	0.558	0.311	37.928	0.000
	Functional products	Functional products	0.510	0.260	29.495	0.000
	Organic products	Functional products	0.570	0.325	40.401	0.000
	Functional products	Organic products	0.528	0.279	32.491	0.000
"dog-parent"	Organic products	Organic products	0.122	0.116	19.544	0.000
	Functional products	Functional products	0.478	0.228	41.727	0.000
	Organic products	Functional products	0.359	0.129	20.920	0.000
	Functional products	Organic products	0.453	0.206	36.489	0.000
"pet-owner"	Organic products	Organic products	0.127	0.016	.855	0.360
	Functional products	Functional products	0.299	0.090	5.118	0.028
	Organic products	Functional products	0.106	0.011	0.592	0.445
	Functional products	Organic products	0.193	0.037	2.009	0.162

Note, * p <.05, ** p <.01, *** p <.001, N=284

Table 16: *Regression usage of organic and/or functional products by pets and pet owners per clusters*

These regression analyses show differences between the clusters of relationship or bond between the dog and its owner.
The highest correlation was observed in the cluster of "dog-people". A slightly lower correlation was present in the "dog-parent" cluster.
The cluster of "pet-owner" had no significant correlations, Sig. >0.05.

4.6.4. Demographic and country characteristics

Correlations regarding the demographic characteristics of age, gender, family type, income, and education were mostly significant.

Cluster		N	Age	Gender	Fam. Type	Education	Income
Total population	Organic products	284	0.211**	0.174**	0.168**	-0.204**	-0.002
	Functional products		0.249**	0.178**	0.149*	-0.200**	0.038
"dog-people"	Organic products	87	0.164	0.238*	0.160	0.148	-0.022
	Functional products		0.124	0.170	0.123	0.125	0.050
"dog-parent"	Organic products	143	0.212*	0.313**	0.247**	-0.196*	-0.025
	Functional products		0.281**	0.373**	0.247**	-0.196*	0.013
"pet-owner"	Organic products	54	0.102	-0.113	-0.118	-0.077	0.203
	Functional products		0.073	-0.141	-0.148	-0.077	0.193

Note, * p <.05, ** p <.01, *** p <.001, N=284
Table 17: *Correlation usage of organic and/ or functional products by pets and owner clusters*

Remarkable differences were seen between countries and clusters.
Where the number of "dog-people" and "dog-parent" was effectively equivalent in the United States and the United Kingdom, the Netherlands shows a completely different distribution.

Country	"dog-people"		"dog-parent"		"pet-owner"		Total	
	N	%	N	%	N	%	N	%
United States	42	15	53	19	9	3	104	37
United Kingdom	44	16	54	19	7	3	105	37
Netherlands	1	4	36	13	38	13	75	26
Total	87	35	143	51	54	19	284	100

Table 18: *Frequency cluster per country*

4.6.5. Hypotheses

H	Dimension	Effect	On dimension
1	Usage of functional foods	Supported	Usage of specialized pet food
2	Usage of organic foods	Supported	Usage of specialized pet food
3	Pet being part of the family	Supported	Usage of specialized pet food
4	Stronger bond or relationship	Supported	Usage of specialized per food

Table 19: *Hypotheses Humanization of pet food*

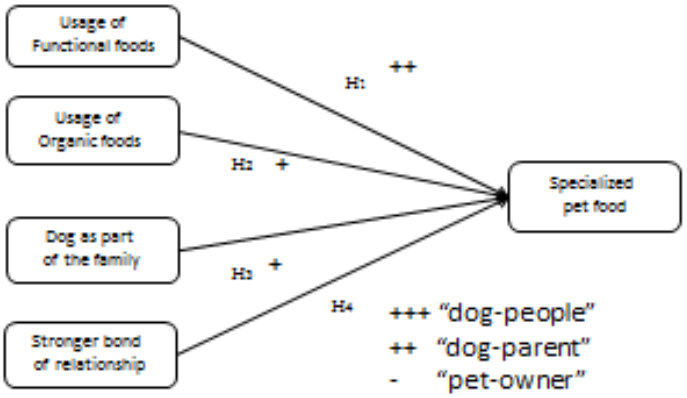

Figure 2: *Empirically validated model*

4.7 Summary of results

Examining the demographics of the interviewed dog owners did not reveal outliers. All ages, gender, income groups and levels of education were represented. In terms of the sample of dogs, most owners had only one dog, but no correlation was found between number of dogs and the other items asked. In fact, dog characteristic showed no correlation to one of the other items. An overview of all correlations can be found in appendix VII and for specific cluster correlation in appendix VIII.

Eating organic products or eating functional products by the dog owner, by asking the dog owner the usage via examples of these products lead to a correlation of these types of products. For this reason it was possible to combine these questions to one item which simplified the analysis

One might conclude that the interviewed population had a good understanding of what these products were. The participants were aware of purchasing these products; they knew what was meant by functional and organic products. In the next step, regarding the willingness to purchase specialized pet food if one personally uses organic and/or functional products.
Correlations were found from 0.475 to 0.534 with a Sig. from 0.000.
Regression analysis showed an R-square: <0.226 - 0.299> with a Sig from 0.000.

The hypotheses 1 and 2, mentioned in the chapter two, a "to be expected" correlation between the usages of organic and or functional products of the dog owner and the willingness to purchase specialized pet food, is correlated with strong significant results and can be supported.

A correlation was to be expected between seeing a dog as "part of the family" and the willingness to purchase specialized pet food. Correlation was seen from 0.435 for organic pet food products and 0.426 for functional pet food products. Regression analyses showed an R-square from 0.189 and 0.181.
The third hypothesis can be supported in respect of the dog being a part of the family and the willingness to purchase specialized pet food.

To gain deeper understanding about this dog-human relationship, the results of the items regarding "dog in the family" were divided into three clusters. Clusters created were; "dog-people", "dog-parent" and "pet-owner". Whereas the bond of the dog-people is that strong, the dog is seen as a family child and the pet owner sees his dog as an animal. A "dog-parent" is between these clusters; a dog is more than a dog, it is a buddy, not a child, it still is a dog. All three clusters— "dog-people", "dog-parent" and "pet-owner"—showed significant correlation.
Regression analysis to find causal relation between the clusters of the item "dog as part of the family" gave for the cluster "dog-people" an R-square from <0.260 - 0.325> with Sig <0.05.
Cluster "dog-parent" had an R-square from <0.161 - 0.228> with a Sig. <0.05.
The third cluster "pet-owner" significance was: Sig. ≥ 0.05. No causal relation was seen.
The fourth hypothesis can be supported in respect of the clusters of "dog-people" and "dog-parent", however, the data from the "pet-owner" cluster, does not support the hypotheses.

No correlations were found between the control variable demographic characteristics and the usage of organic and or functional products by the dog owner and the willingness to purchase specialized pet food.

The differences on country level in the distribution of "dog in the family" cluster items are remarkable. The United States and the United Kingdom are comparable considering the found numbers of "dog-people", "dog-parent" and "pet-owner", and the Netherlands shows a completely other distribution across all three clusters.

uu5. Discussion and recommendation

In this chapter you will find the conclusions coming out of this study. The results will be discussed and related to literature earlier used in this study. Finally the limitations and further research are discussed.

5.1 Conclusion

The aim of this study was to explore the possible relationship between the usage of functional and/or organic products by the pet owner and the willingness to purchase specialized pet food. Moreover, the role of the dog as a family member is also taken into account in this relationship. Both possible relationships have been examined for various demographics. When looking at the item "dog in the family", three clusters were created to gain a better understanding of the relationship of the dog and the owner and the usage of specialized pet food.

The results from this study show that dog owners who eat functional and/or organic products also purchase these types of products for their dogs. The study of Goetzke (2014[b]) concluded that the functional and organic food product consumers have the same understanding about health and well-being, but their route to health is different. This understanding, combined with the fact that organic products are bought by consumers for reason of ethics, animal welfare (Makatouini, 2002), social responsibility (Nasir and Karakaya, 2014) and healthiness (Lim et al., 2014), leads to the conclusion that the usage of these products does not stop at the usage of the owner him or herself. The behavior is extended in the owner's purchase of pet food. The dog owner is thinking about his own health and well-being as well as that of his or her dog.

- Hypotheses 1 and 2: Consumers who use functional and/or organic foods for themselves are willing to purchase specialized pet food.

In this study, no correlation was found between demographic characteristics of the dog owner and the usage of functional and/or organic pet food products. This is in line with previous research from Di Donfrancesco et al. (2014), who saw no correlation between income, age, gender and education and the individual consumer acceptance of dog food products. However, this result is opposed to that of Kumcu and Woolverton (2014), who stated that premium human food consumers with higher education and incomes are more likely to purchase premium pet food. In addition, they showed that demographics of households without children (mostly associated with pet humanization) are found to increase

the likelihood to enter the premium pet food market. Comparable results were found in the study of Phuah et al. (2015), whose study found correlations between usage of functional products and the demographics of these persons. Boya et al. (2012) found a relation with gender and the usage of specialized pet food, this could not be confirmed by the results of this study.

Correlation is found between perceiving the pets as part of the family and usage of specialized pet food. These results were also found in earlier research by Boya et al. (2012). This study showed in more detail the type of pet food product used in comparison to the roll or bond, the dog has with family members.

- Hypothesis 3: Dog owners where pets are considered as part of the family are willing to purchase specialized pet food.

The breakdown, also done by Boya et al. (2014) showed relationships in two out of the three created clusters.
The "dog-people" have very strong relationships with their dogs. A dog is seen as a child. The "pet-owner" is having dogs as dogs, the dog as an animal. The cluster between, the "dog-parent", is having dogs as a part of their own family. The results indicate that strong bonds between the dog and the family as found in the clusters "dog-people" and "dog-parent" and using functional and/or organic food products for themselves. This leads to more likelihood of purchasing specialized pet food.
Results from Boya (2014) showed the differences in the way people think about healthiness of the dog and dog food-related choice patterns. This study confirms these clusters and shows the willingness of dog owners to purchase specialized pet food products. As being concerned about healthiness and wellness can be seen in the usage of functional and/or organic food products.

- Hypothesis 4: Dog owners eating functional and/or organic food products with stronger bond with their pets are more willing to purchase specialized pet food.

5.2 Discussion

An important contribution of this research is the correlation found between the usage of functional and/or organic products by dog owners, the human-dog relationship clusters found by Boya (2014) and the usage of functional and/or organic pet food.

This study confirms the found relationship by Kumcu and Woolverton (2014) where it was stated that dog owners purchasing premium products for themselves are willing to purchase premium pet food for their dogs. Kumcu and Woolverton do not detail what is meant by "premium products", this study confirms that organic and functional products are examples of premium products.

This study also confirms the findings of Boya et al. (2014) that there are different segments of dog owners based on the dog's relationship or bond with its owner. Boya has found there three types of dog owners; the "dog-people", the "dog-parent" and the "pet-owner".

This research correlated the three found clusters by Boya with the usage of functional and/or organic food products by the dog owners and the willingness of these dog owners to purchase specialized pet food. These correlations were confirmed in two of three clusters, namely the "dog-people" and the "dog-parent" cluster.

Both clusters show strong relationships of dog and dog owner and the purchasing behavior of functional and/or organic food products and functional and/organic pet food products.
These findings have a number of implications for pet food marketing.
If the dog owner out of the cluster "dog-people" or "dog-parent" is purchasing functional and/or organic food products for themselves, they are willing to purchase specialized pet food. Next to the fact that these results add to the literature on dog-related consumer behavior it also provide pet food marketing from companies who want to sell specialized pet food a more detailed perspective on targeting dog owners. The marketeer can with this knowledge adjust his advertising strategy.

Tesfom and Birch's study (2010) saw a significant relationship between the dog owner's concerns about the quality of dog food than about purchasing healthy food for themselves. This was seen especially at the group of "dog-people". This significant relationship is confirmed by this study. Although this study is correlating this purchasing behavior with the usage of healthy products by the dog owner, what was not seen in the study of Tesfom and Birch.

5.3 Recommendations for practice

The consumers are becoming more demanding about where products are coming from and what they are made of (Mollet and Rowland, 2002). Knowing this in relationship with the results of this research, it gives pet food marketers information how to manipulate the market. This study shows a significant correlation between people purchasing functional and/or organic products for themselves and purchasing of specialized pet food for their dogs. With this information, the manufacturers and marketers of specialized pet food producers have another tool that could help make their marketing strategies more successful.

For the consumers the following implications are seen.

The "dog-people" and "dog-parent" consumers are demonstrably willing to purchase pet food which contributes to the health of the dog. They appear to be interested in the social responsibility exhibited by the supplier during the processing of its pet food products. It has become an important aspect of purchasing that specific A- premium pet food.

Dog owners become more educated and aware of what animal food products and all kind of human products are made of. Dog owners know more about functional and organic products and are more aware of the influence food products on one's healthiness and on the environment. This also makes them thinking about what they should have to feed their dog. Although no correlations were found in this study related to demographic characteristics, correlation was found within the three clusters where the dog owner looks at his bond with his or her dog, the clusters; "dog-people" and "dog-parent". These two clusters are well aware what they are purchasing for themselves and their dogs. Whereas the third cluster of "dog owner", is having a less strong bond with the dog and who is looking at other aspects when purchasing pet food.

Cluster distribution on dog relationship per country was remarkable. The distribution of the United States and the United Kingdom on the dog relationship clusters were identical. The distribution among the three different clusters of the Netherlands looked totally different. These differences might be caused by differences in culture between the countries or by the way the survey was sent. Another explanation of the difference in outcome of the cluster distribution between the countries could be caused by the translation into Dutch for the Netherlands.

Overall one might say that the finding of this study indicates that for successful marketing of specialized pet food the purchasing behavior of functional and/or organic human products and the human-dog relationship bond appears to be critical. With the results found marketers know which consumers they should contact and how and where they should advertise.

5.4 Limitations

A limitation of this survey could be its surveying method. Dog owners were chosen by Survey Monkey based upon their known ownership of dogs. These results cannot be generalized to the overall dog owning public in the United States and the United Kingdom. The same applies to the Netherlands; the used population is made up of colleagues, friends and acquaintances that cannot be generalized to overall dog owning public in the Netherlands. The generalization is not possible because a sample of a population was used.

The respondents indicated through a feedback form at the end of the questionnaire that some questions in the survey were unclear to them and could be read differently. Although these questions were validated in earlier research this feedback from the responders should be taken into account for further research.

An interview methodology with a more personal explanation could be used in future to extract more information from the responders. The disadvantage of this type of interviewing is the danger of socially desirable answers. Additionally, it would be time consuming to interview this number of respondents that the survey had, conducting that many questionnaires would take a lot of time. Next to that, participation coming from two continents and three countries makes the interview methodology tool almost impossible for research.
Doing a similar study in Japan could give more insights on the subject, as this is a completely different (not western) market where sales show that pets are their new "fur" babies, this was seen in a not earlier mentioned research from Vänskä (2014).

A final limitation which can be mentioned is, that there are different definitions for functional food as well as for organic food products as previously mentioned in this research and these definitions are of great importance for the drawing of conclusions when looking for correlation in the usage of these types of products, the found clusters of dog binding and the willingness to purchase specialized pet food.

5.5 Recommendations for future research

Studies on humanization of pets as part of the family have been conducted by many researchers, such as Boya, Goetzke, Mosteller, Holbrook, Cavanaugh, Kumcu and Woolverton. However, results from these studies do not agree on some points and are occasionally contradictory. A future study could help us further understand the humanization of pets and whether this phenomenon affects consumer behavior towards pets. We might therefore also better understand the impact of this changing human-dog relationship on society.

A future study might be to investigate what is meant by functional and/or organic pet food, what are the consumer needs and requirements concerning this specialized pet food. This would benefit the industry to produce the products that consumers are asking for and is willing to purchase.

Finally, future research could investigate the differences in the cluster distribution of dog owners from not only the Netherlands, the United States, and the United Kingdom, but other Western-European countries as well. It might determine whether the cluster distribution of "dog-people", "dog-parent" and "pet-owner" in Germany and France is comparable to the United States, the United Kingdom, or is this distribution the same as found for the Netherlands.

The information on the distribution of clusters -the number of "dog-people" and "dog-parent" versus the number of "pet-owner"- and the eating habits of these owners would be essential for the assessment of the market and would guide the marketers how to work the market for specialized pet food.

Finally, future research could be looking at the health of pets in relation to nutrition. As relationship is becoming increasingly important pet health is becoming more important (there is also increasing obesity, diabetes and dental problems in pets).

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Appendix

Appendix I: Humanization of Pet Food – US (UK, NL).

Thank you very much for agreeing to help me by participating in this questionnaire. This should only take around 20 - 30 minutes.

Before you begin, please read these important notes

• The questionnaire is anonymous

• This questionnaire should be completed by the person who knows the dog best. If you have more than one dog please complete the questionnaire for the dog best known

• Some answers require a Yes or No answer

• Others questions require a checkmark in the appropriate thick box

Please try to answer all the questions to make this questionnaire as useful as possible

Thank you for your assistance

Ernst Walet

Ronde Hil 24

4822 AJ Breda, Netherlands

Humanization of Pet Food – US

Section 1 - About your dog

* 1. Do you own a dog?

- Yes
- No

* 2. What is the age of your dog?

- Under 1 year old
- 1 to under 3 years old
- 3 to under 5 years old
- 5 to under 7 years old
- 7 to under 9 years old
- 9 to under 11 years old
- 11 or more years of age

* 3. For about how long have you owned or looked after your dog?

- Less than a year
- 1 to under 3 years old
- 3 to under 5 years old
- 5 to under 7 years old
- 7 to under 9 years old
- 9 to under 11 years old
- 11 or more year:

* 4. Is your dog a Pure breed or a mixed breed?

- Pure breed
- Mixed Breed

* 5. What gender is your dog?

- Male
- Female

* 6. Has your dog been neutered / spayed?

- Yes, neutered
- Yes, spayed
- No

* 7. How many dogs do you currently own?

- 1
- 2
- 3
- 4
- 5 or more

Section 2 - About the food you feed your dog

* 8. How often do you feed your dog?

- Once a day
- Twice a day
- Three times a day
- 4 or more times per day
- Other (Please specify)

* 9. Where do you usually purchase your pet food?

- Supermarket
- Veterinary Practice
- Pet store Online
- Other (Please specify)

* 10. What food do you feed your dog? (Select all that apply)

- Canned Food (Supermarkets own)
- Canned Food (Branded Product)
- Dry Food/mixer (Supermarkets own)
- Dry Food/mixed (Branded Product)
- Pouches (Supermarkets own)
- Pouches (Branded Product
- Aluminum trays (Supermarkets own)
- Aluminum trays (Branded Product)
- Therapeutic/Prescription/Veterinary diet
- Home cooked food
- Raw food
- Scraps
- Other (Please Specify)

* 11. Do you feed your dog any of the following diets? (Select all that apply)

- Therapeutic/Prescription/Veterinary diet
- Home cooked food
- Raw food
- Other (please specify)

* 12. How did you establish your current feeding routine? (Select all that apply)

- On advice from Vet
- On advice from breeder/rescue center
- From information on pet food packaging
- From published information in book/magazine
- From published information online
- It is how I have always fed my dog's
- Other (please specify)

* 13. When buying prepared foods, how important are the following factors7

Somewhat / Not at all Important / Slightly Important / Important / Very Important / Extremely Important

- Price
- Ease of availability to purchase
- Veterinary recommendation
- Breeder recommendation
- Friend/family recommendation
- Brand reputation
- Environmentally friendly packaging
- Whether your dog will eat it

* 14. Do you feed your dog table scraps / left overs?

- Every day
- A few times a week
- A few times a month
- Never

* 15. Do you feed your dog snacks or treats?

- Every day
- A few times a week
- A few times a month
- Never

* 16. Does your dog scavenge? E.g. steal food, raid the bin, and eat things it shouldn't?

- Always
- Sometimes
- Never

* 17. Do you give your dog any supplements?

- Daily
- Weekly
- Monthly
- I do not give my dog supplement:

* 18. Which supplements do you give your dog?

- Vitamins
- Fatty acids or oils
- Glucosamine and/or chondroitin
- Other (please specify)

* 19. Organic food: An organic food is a food to be produced without the use of synthetic fertilizers and pesticides, genetic engineering, growth hormones, irradiation and antibiotics.

When considering a home-made/raw organic food diet for your dog, how is yours formulated?

- Recipe from Vet/ Nurse
- Recipe from Book/Online
- Recipe from Friend
- My Own/Family Recipe
- I do not feed my dog a home-made organic food diet
- Other (please specify)

* 20. Why do you feed a home-made diet?

- Belief that it is healthier for my dog
- Cheaper than commercial pet food
- For ease
- Recommended in book/online/press
- Preference of dog
- Other (Please Specify)

* 21. Functional food: A functional food is a food which is given an additional function (often one related to health-promotion or disease prevention) by adding new ingredients foods should be made from naturally occurring ingredients and are not capsuled or powdered.

When considering a home-made/raw functional food diet for your dog, how is yours formulated?

- Recipe from Vet/ Nurse
- Recipe from Book/Online
- Recipe from Friend
- My Own/Family Recipe
- I do not feed my dog a home-made functional food diet
- Other (please specify)

* 22. Why do you feed a home-made diet?

- Belief that it is healthier for my dog
- Cheaper than commercial pet food
- For ease
- Recommended in book/online/press
- Preference of dog
- Other (please specify)

* 23. What brand of dog food do you buy?

- Royal Canine
- Pedigree
- Hills
- Other (please specify)

* 24. Do you consider your dog to be a member of your family?

- Yes
- No
- Sometimes

* 25. Do you research your pet's food before purchase?

- Yes
- No
- Sometimes

* 26. Do you believe your dog food contributes to your dog's happiness?

- Yes
- No
- Sometimes

Section 3 – About the dog in the family

* 27. The dog in the family

Strongly Agree / Agree / Neutral / Disagree / Strongly Disagree

- I treat my dog as a person
- My dog is my best friend
- I see dog more like people than wild animals
- I can’t imagine a household without dogs
- I allow my dog to sit on the furniture
- I purchase items online or my dog
- Owning a dog has affected my choice of living space
- When I am feeling stressed, being with my dog calms me down
- Spending time with my dog prevents me from spending as much time with other humans
- I feel like I can communicate with my dog
- I feel like a kid when I am playing with my dog
- I like having my dog sleep on the bed with me
- I am loyal to certain dog food brands

* 28. The dog in the family

Strongly Agree / Agree / Neutral / Disagree / Strongly Disagree

- Owning a dog has changed my grocery shopping habits
- Dogs make the world a place for me
- My dogs have helped me develop better relationships with other people
- My dog is a part of my family
- My dog keeps me young
- My dog is allowed anywhere in the house
- Price doesn't matter to me when it comes to buying me something that it likes
- Owning a dog has affected the setup of my home
- Having a dog is like having a child living at home
- My dog is an extension of myself
- I have the same responsibilities as a parent when it comes to taking care of my dog
- Having a dog forces me to exercise more

Section 4 - About your dog's healthiness

* 29. Do you think your dog is

- Far too thin
- A bit thin
- Just right
- A bit overweight
- Very overweight

* 30. If you think that your dog is overweight, why do you think that it is?

- Not Applicable
- Too much food
- Too little exercise
- Medical condition
- Don't know

* 31. How do you decide how much to feed your dog?

- Instructions on dog food can or packet
- Advice from Vet
- Until dog stops eating
- Assess body condition and adjust
- It is how I have always fed my dog's
- Don't know
- Other

* 32. Are you aware of any health risks associated with obesity in dogs?

- Yes
- No

* 33. Have you ever tried to reduce your dog's weight?

- Yes
- No

* 34. If Yes, how did you try to achieve weight loss?

- Reduce food
- Change diet
- Increase exercise
- Other

* 35. Have you ever asked for veterinary advice about trying to reduce the weight of your dog?

- Yes
- No

* 36. Has your vet ever suggested a new diet for controlling your dog's weight?

- Yes
- No

Section 5 - About organic and functional foods

* 37. Functional food: A functional food is a food which is given an additional function (often one related to health-promotion or disease prevention) by adding new ingredients foods should be made from naturally occurring ingredients and are not capsuled or powdered.

Functional Food Consumption: How often do you generally eat the following functional products / foods with additional health benefits

Always / Very Frequently / Occasionally / Rarely / Very Rarely / Never

- Probiotic milk products
- ACE drinks (drinks enriched with vit. A, C and E)
- Wellness water
- Wellness flakes / muesli
- Bread with vitamins / supplements
- Energy drinks
- Low fat products
- Low sugar products

* 38. How often have you eaten functional food/foods with additional benefits during the last 6 months?

Remark: this Question refers to the above mentioned functional foods.

- More than once a week
- Once a week
- Twice a month
- Once a month
- Once every 2/3 month
- Once every 4/6 month
- I don't eat

* 39. Organic food: An organic food is a food to be produced without the use of synthetic fertilizers and pesticides, genetic engineering, growth hormones, irradiation and antibiotics.

Organic food consumption: How often do you generally eat the following organic products / foods with additional health benefit:

Always / Very Frequently / Occasionally / Rarely / Very Rarely / Never

- Organic vegetables /salads
- Organic fruit
- Organic milk and dairy products
- Organic bread and bakery goods
- Organic meat and sausage products
- Organic cereal / muesli
- Organic eggs

* 40. How often have you eaten organic food/foods with additional benefits during the last 6 months?

Remark: this Question refers to the above mentioned organic food:

- More than once a week
- Once a week
- Twice a month
- Once a month
- Once every 2/3 month
- Once every 4/6 month
- I don't eat

Section 6 - About consumption of foods

* 41. * 42. About consumption of food :

Not at all important / Slightly Important / Somewhat Important / Very Important / Extremely important

- Pesticide residues in fruit and vegetable are harmful to human health
- Pesticide residues in fruit and vegetable are harmful to pets

- Genetically modified food is a danger to human health
- Genetically modified food is a danger to pets health

- I am willing to pay considerably higher prices for food that has considerable higher quality standards
- I am willing to pay considerably higher prices for pet food that has considerable higher quality standards

- Artificial flavors and additives in food are harmful to human health
- Artificial flavors and additives in food are harmful to pet health

- I trust food more that was produced in my home country
- I trust pet food more that was produced in my home country

- I think that organic products are too expensive
- I think that organic pet foods are too expensive

- I generally buy organic food
- I generally buy organic pet food

- I generally do not buy product including preserving agents
- I generally do not buy pet food including preserving agents

- The taste of meals is more important than the ingredients
- The taste of pet food is more important than the ingredients

- I am willing to pay more for healthy products
- I am willing to pay more for healthy pet products

- When I try new products, I do not usually check the list of ingredients
- When I try new pet food, I do not usually check the list of ingredients

Section 7 - About you

* 43. What is your age?

- 18 to 24
- 25 to 34
- 35 to 44
- 45 to 54
- 55 to 64
- 65 to 74
- 75 or older

* 44. What is your gender?

- Male
- Female

* 45. Family Type?

- Single male
- Single female
- Couple with children
- Couple without children
- Single male with children
- Single female with children

* 46. What is the highest level of education you have completed?

- less than high school
- graduated from high school
- few years of college
- graduated from college
- some graduate school
- completed graduate school

* 47. How would you describe your own body condition?

- Underweight
- Slightly underweight
- Within recommended weight range
- Slightly overweight
- Overweight

* 48. Into which of the following categories does your total annual household income fall?

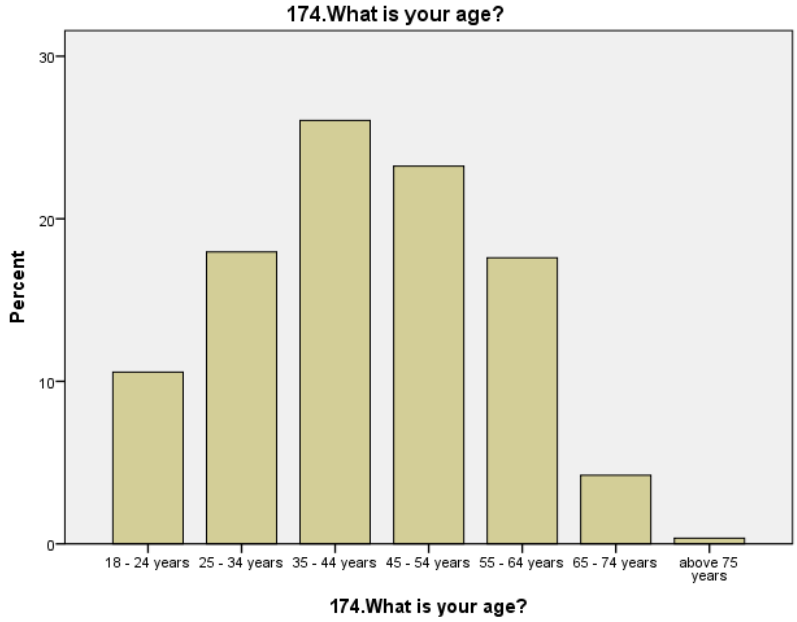
- Less than $17,500
- $17,500 to under $35,000
- $35,000 to under $52,500
- $52,500 to under $70,000
- Over $70,000
- Prefer not to answer

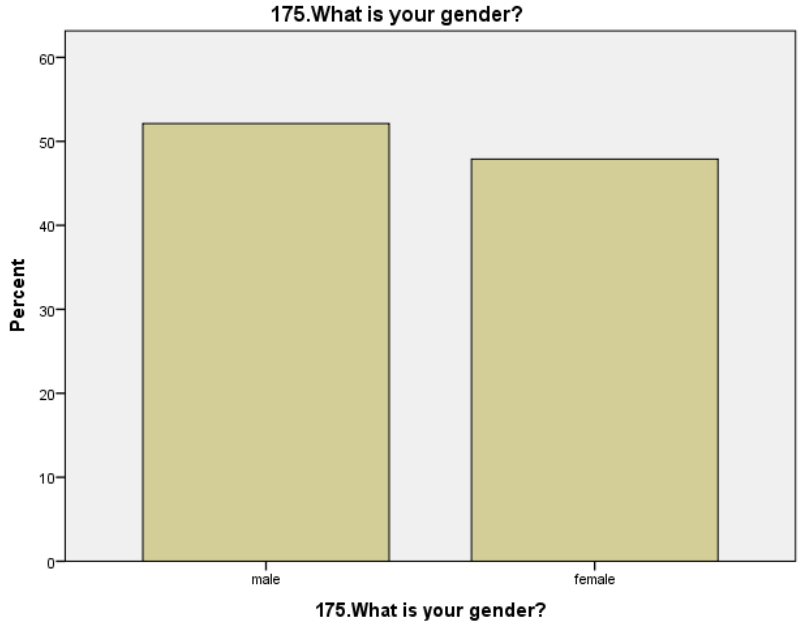
Appendix II: Demographics of the dog owners.

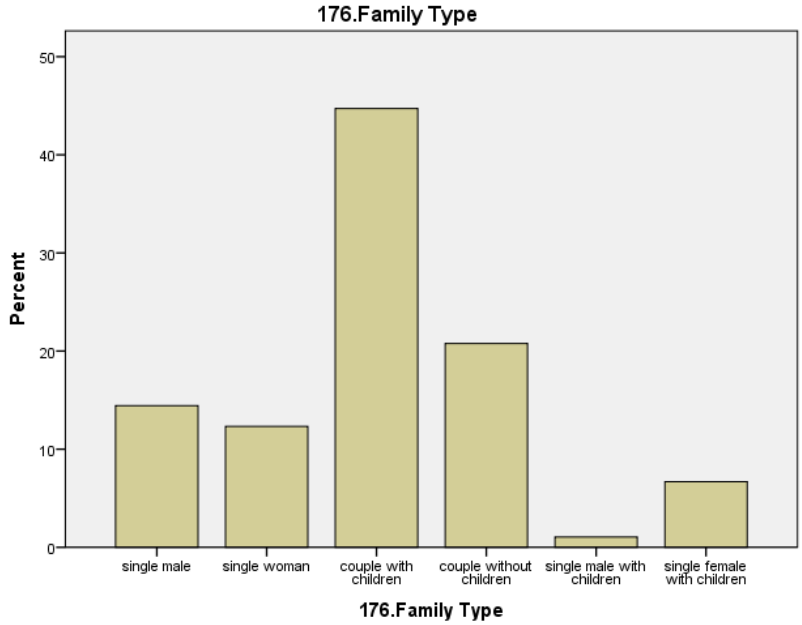
Country		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	US	104	36.6	36.6	36.6
	UK	105	37.0	37.0	73.6
	NL	75	26.4	26.4	100.0
	Total	284	100.0	100.0	
What is your age?		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18 - 24 years	30	10.6	10.6	10.6
	25 - 34 years	51	18.0	18.0	28.5
	35 - 44 years	74	26.1	26.1	54.6
	45 - 54 years	66	23.2	23.2	77.8
	55 - 64 years	50	17.6	17.6	95.4
	65 - 74 years	12	4.2	4.2	99.6
	above 75 years	1	.4	.4	100.0
	Total	284	100.0	100.0	
What is your gender?		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	148	52.1	52.1	52.1
	Female	136	47.9	47.9	100.0
	Total	284	100.0	100.0	
Family Type		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	single male	41	14.4	14.4	14.4
	single woman	35	12.3	12.3	26.8
	couple with children	127	44.7	44.7	71.5
	couple without children	59	20.8	20.8	92.3
	single male with children	3	1.1	1.1	93.3
	single female with children	19	6.7	6.7	100.0
	Total	284	100.0	100.0	
What is the highest level of education you have completed?		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	less than high school	12	4.2	4.2	4.2
	graduated from high school	80	28.2	28.2	32.4
	few years of college	56	19.7	19.7	52.1
	graduated from college	80	28.2	28.2	80.3
	some graduate school	9	3.2	3.2	83.5
	completed graduate school	47	16.5	16.5	100.0
	Total	284	100.0	100.0	

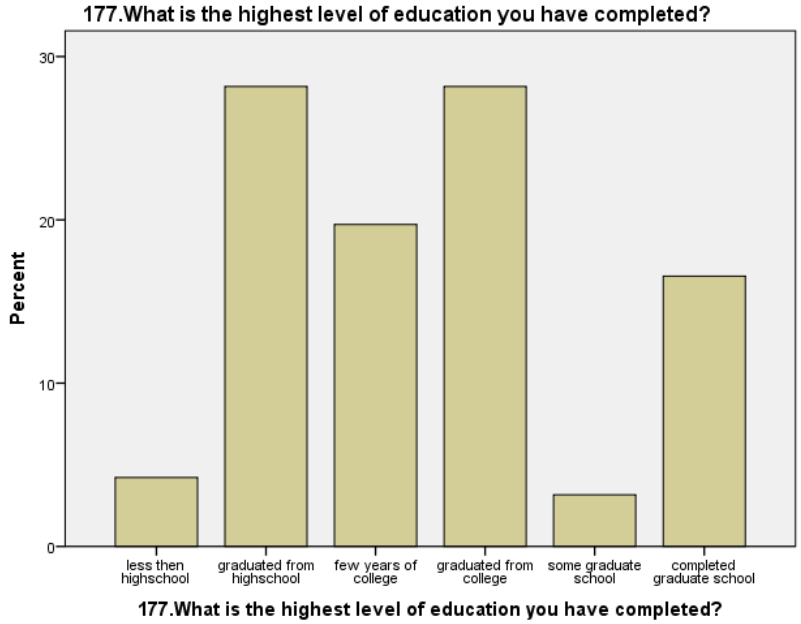
Into which of the following categories does your total annual household income fall?		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	less than $ 17.500	20	7.0	7.0	7.0
	$ 17.500 - $ 35.000	60	21.1	21.1	28.2
	$ 35.000 - $ 52.500	50	17.6	17.6	45.8
	$ 52.500 - $ 70.000	57	20.1	20.1	65.8
	over $ 70.000	60	21.1	21.1	87.0
	Prefer not to answer	37	13.0	13.0	100.0
	Total	284	100.0	100.0	

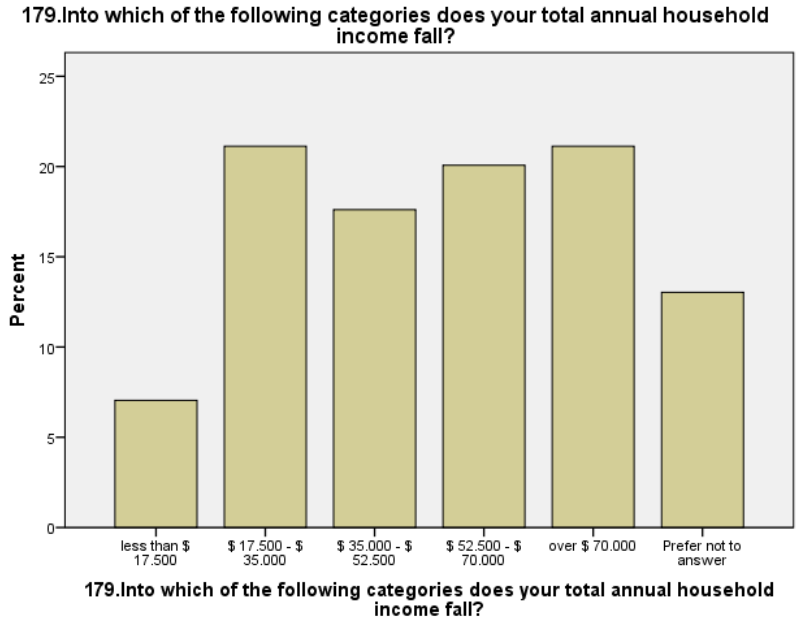
Appendix III: Graphical results of the survey, human demographics






176.Family Type
Percent
50
40
30
20
10
0
single male
single woman
couple with children
couple without children
single male with children
single female with children
176.Family Type

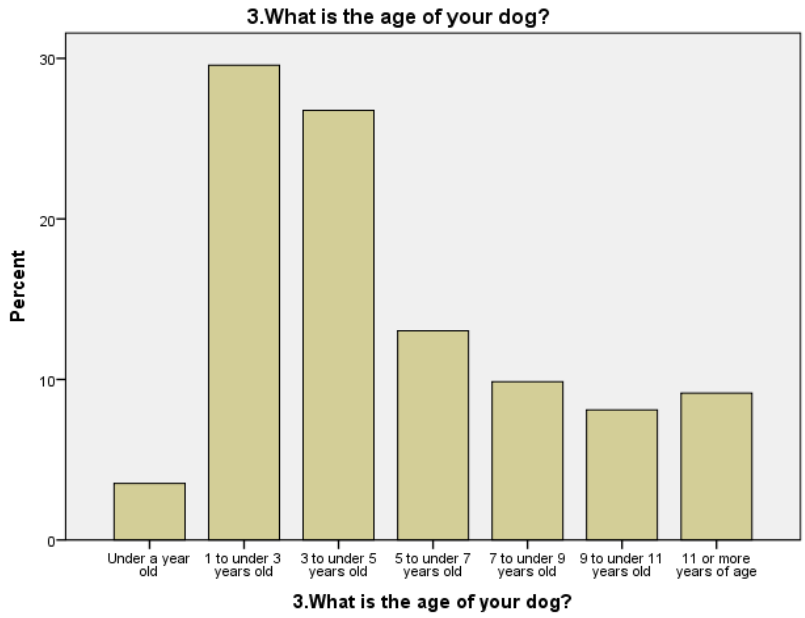

177.What is the highest level of education you have completed?
Percent
30
20
10
0
less then highschool
graduated from highschool
few years of college
graduated from college
some graduate school
completed graduate school
177.What is the highest level of education you have completed?

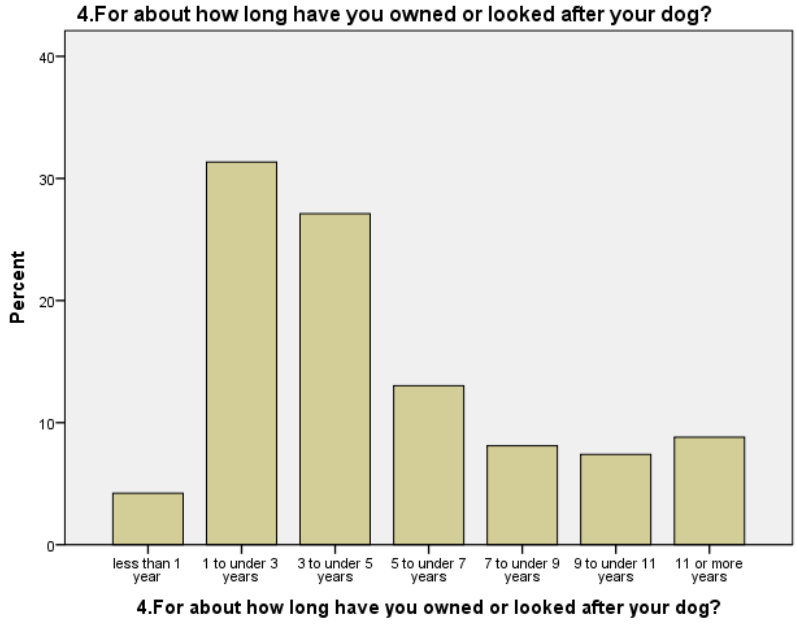

179.Into which of the following categories does your total annual household income fall?
Percent
25
20
15
10
5
0
less than $ 17.500
$ 17.500 - $ 35.000
$ 35.000 - $ 52.500
$ 52.500 - $ 70.000
over $ 70.000
Prefer not to answer
179.Into which of the following categories does your total annual household income fall?

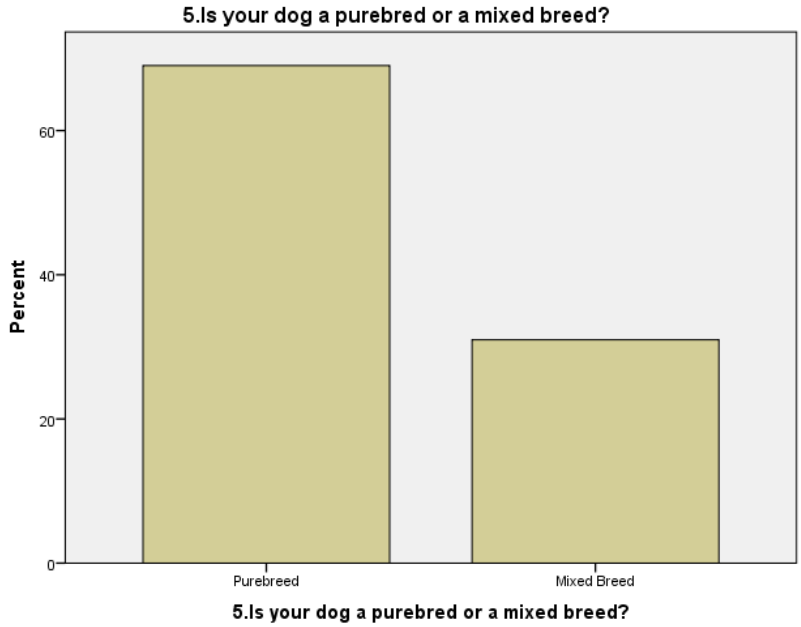
Appendix IV: Demographics dogs.

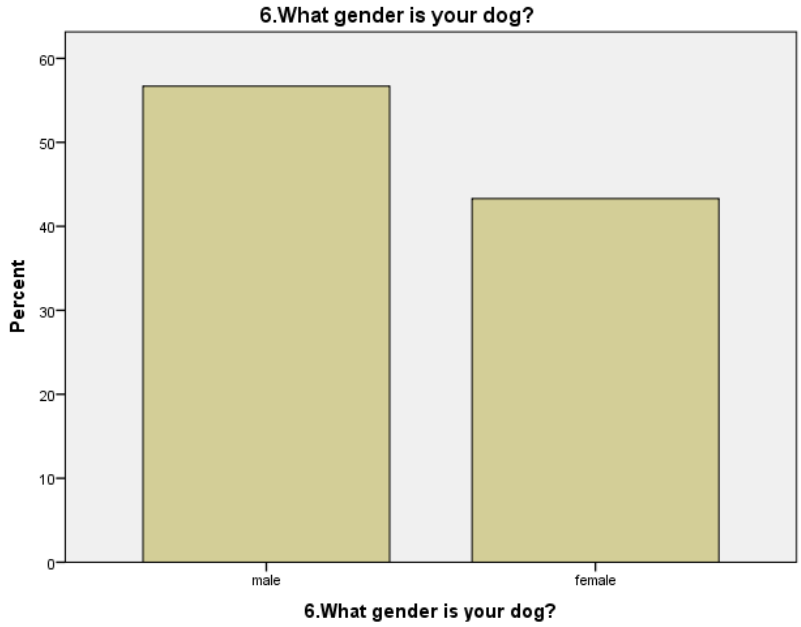
What is the age of your dogs		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Under a year old	10	3.5	3.5	3.5
	1 to under 3 years old	84	29.6	29.6	33.1
	3 to under 5 years old	76	26.8	26.8	59.9
	5 to under 7 years old	37	13.0	13.0	72.9
	7 to under 9 years old	28	9.9	9.9	82.7
	9 to under 11 years old	23	8.1	8.1	90.8
	11 or more years of age	26	9.2	9.2	100.0
	Total	284	100.0	100.0	
For about how long have you owned or looked after your dog?		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	less than 1 year	12	4.2	4.2	4.2
	1 to under 3 years	89	31.3	31.3	35.6
	3 to under 5 years	77	27.1	27.1	62.7
	5 to under 7 years	37	13.0	13.0	75.7
	7 to under 9 years	23	8.1	8.1	83.8
	9 to under 11 years	21	7.4	7.4	91.2
	11 or more years	25	8.8	8.8	100.0
	Total	284	100.0	100.0	
Is your dog purebred or a mixed breed?		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Pure breed	196	69.0	69.0	69.0
	Mixed Breed	88	31.0	31.0	100.0
	Total	284	100.0	100.0	
What gender is your dog		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	161	56.7	56.7	56.7
	Female	123	43.3	43.3	100.0
	Total	284	100.0	100.0	
Has your dog been neutered/spayed?		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes neutered	79	27.8	27.8	27.8
	yes spayed	125	44.0	44.0	71.8
	No	80	28.2	28.2	100.0
	Total	284	100.0	100.0	
How many dogs do you currently own?		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	198	69.7	69.7	69.7
	2	71	25.0	25.0	94.7
	3	8	2.8	2.8	97.5
	4	1	.4	.4	97.9
	5	6	2.1	2.1	100.0
	Total	284	100.0	100.0	

Appendix V: Graphical results of the survey, dog demographics.

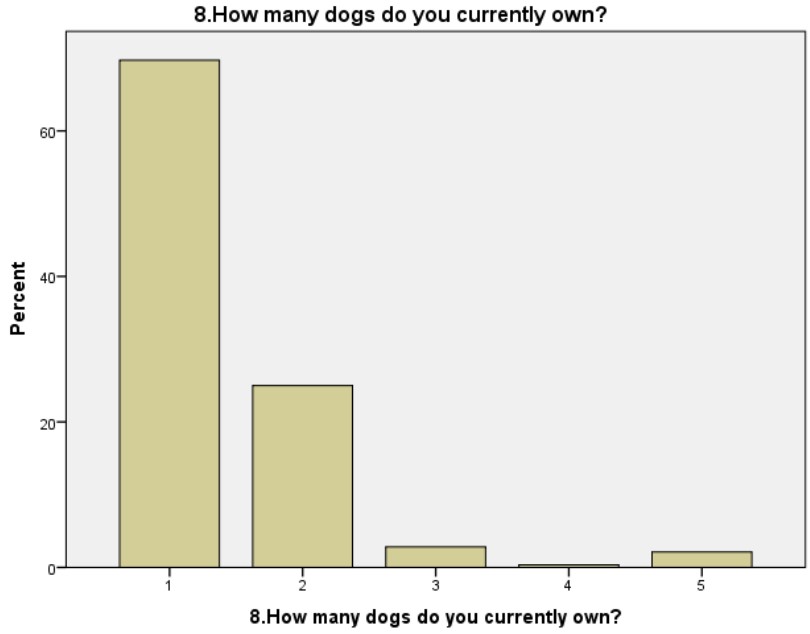





5.Is your dog a purebred or a mixed breed?
Percent
60
40
20
0
Purebreed
Mixed Breed
5.Is your dog a purebred or a mixed breed?


6.What gender is your dog?
Percent
60
50
40
30
20
10
0
male
female
6.What gender is your dog?


7.Has your dog been neutered/spayed?
Percent
50
40
30
20
10
0
yes neutered
yes spayed
no
7.Has your dog been neutered/spayed?


8.How many dogs do you currently own?
Percent
60
40
20
0
1
2
3
4
5
8.How many dogs do you currently own?

Appendix VI: Results SPSS Factor Analyses.

Communalities		
	Initial	Extraction
Dog owner eating functional foods	1.000	0.665
Dog owner eating organic foods	1.000	0.606
Dog eats organic foods	1.000	0.760
Dog eats functional foods	1.000	0.757
Dog in the family	1.000	0.953
Dog Human Relationships	1.000	0.954

Extraction Method: Principal Component Analysis

Total Variance Explained							
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	3.522	58.692	58.692	3.522	58.692	58.692	3.204
2	1.174	19.569	78.261	1.174	19.569	78.261	2.523
3	0.739	12.318	90.579				
4	0.333	5.555	96.133				
5	0.143	2.381	98.514				
6	0.089	1.486	100.000				

Extraction Method Principal Component Analysis

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance

Component Matrix[a]		
	Component	
	1	2
Dog eats organic foods	0.817	-0.303
Dog eats functional foods	0.814	-0.307
Dog owner eating functional foods	0.768	
Dog in the family	0.762	0.610
Dog Human Relationships	0.722	0.658
Dog owner eating organic foods	0.706	-0.328

Extraction Method: Principal Component Analysis.

a. 2 components extracted.

Pattern Matrix[a]		
	Component	
	1	2
Dog eats functional foods	0.863	
Dog eats organic foods	0.862	
Dog owner eating organic foods	0.801	
Dog owner eating functional foods	0.801	
Dog Human Relationships		0.991
Dog in the family		0.957

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.
a. Rotation converged in 3 iterations.

Structure Matrix		
	Component	
	1	2
Dog eats organic foods	0.871	0.422
Dog eats functional foods	0.870	0.417
Dog owner eating functional foods	0.815	0.403
Dog owner eating organic foods	0.777	0.321
Dog Human Relationships	0.430	0.977
Dog in the family	0.485	0.976

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.

Appendix VII: Pearson Correlation Matrix.

Pearson Correlation						
Total population	Dog owner eating functional foods	Dog owner eating organic foods	Dog eats organic foods	Dog eats functional foods	Dog in the family	Dog Human Relation-ships
Dog owner eating functional foods	1					
Dog owner eating organic foods	0.662**	1				
Dog eats organic foods	0.547**	0.475**	1			
Dog eats functional foods	0.534**	0.483**	0.857**	1		
Dog in the family	0.425**	0.338**	0.435**	0.426**	1	
Dog Human Relationships	0.365**	0.321**	0.382**	0.382**	0.907**	1

** Correlation is significant at the 0.01 level (2-tailed), N=284

Appendix VIII: Pearson Correlation Matrix clusters.

Pearson Correlation					
Cluste: "dog-people"	Dog owner eating functional foods	Dog owner eating organic foods	Dog eats organic foods	Dog eats functional foods	Dog in the family
FF Human	1				
OF Human	0.688**	1			
Eat's Org Food Dog	0.510**	0.558**	1		
Eat's Func. Food Dog	0.528**	0.570**	0.879**	1	
Dog in the family	0.301**	0.249*	0.214*	0.2	1

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed), N=143

Pearson Correlation					
Cluster: "dog-parent"	Dog owner eating functional foods	Dog owner eating organic foods	Dog eats organic foods	Dog eats functional foods	Dog in the family
Dog owner eating functional foods	1				
Dog owner eating organic foods	0.602**	1			
Dog eats organic foods	0.478**	0.349**	1		
Dog eats functional foods	0.453**	0.359**	0.808**	1	
Dog in the family	0.235**	0.172*	0.270**	0.244**	1

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed), N=87

Pearson Correlation					
Cluster: "pet-owner"	Dog owner eating functional foods	Dog owner eating organic foods	Dog eats organic foods	Dog eats functional foods	Dog in the family
FF Human	1				
OF Human	0.433**	1			
Eat's Org Food Dog	0.299*	0.127	1		
Eat's Func. Food Dog	0.193	0.106	0.800**	1	
Dog in the family	0.197	-0.189	0.15	0.12	1

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed), N=54